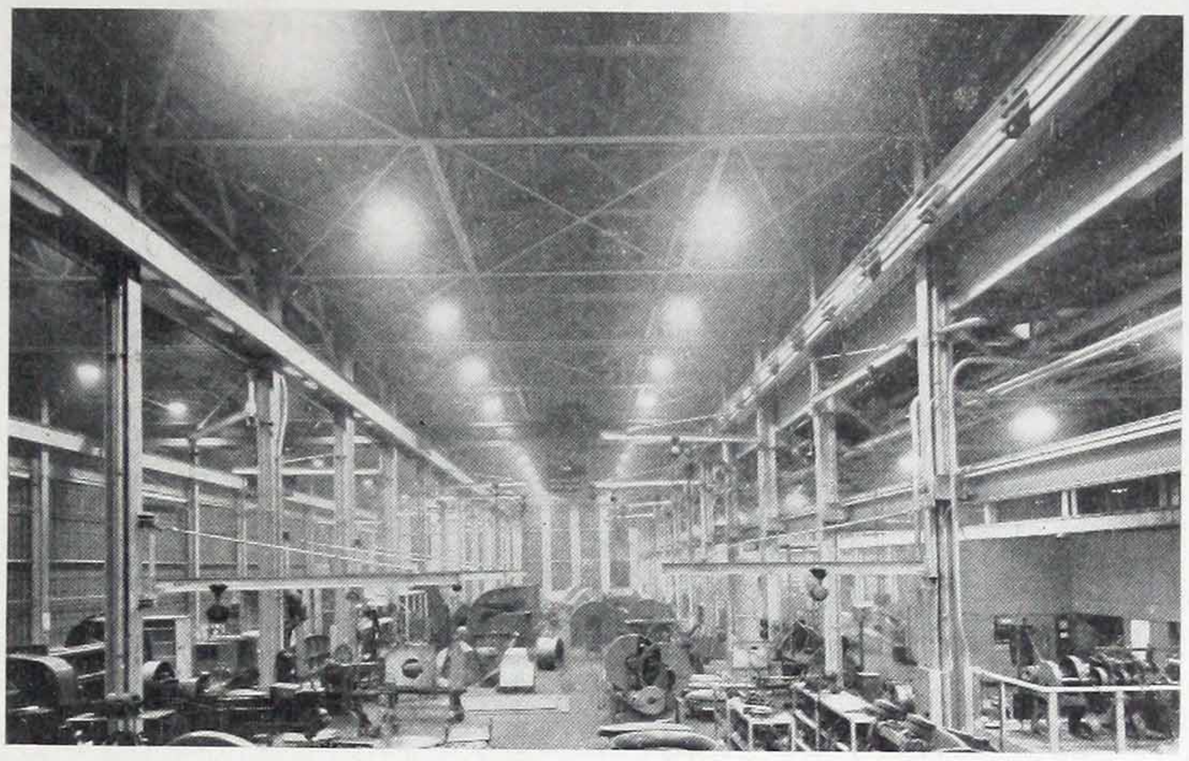
HIGH INTENSITY MERCURY LIGHTING



Westinghouse High Intensity Mercury Lighting Equipment provides many distinct advantages. Chief among these are: (1) The lumen output of this lamp is approximately 2½ times that obtained from Mazda lamps, (2) Present levels of illumination can be materially increased without rewiring and without any increase in wattage, (3) The distinctive color from the lamp assures greater visual acuity, and (4) Increased lamp life.

In industrial applications, Westinghouse High Intensity Mercury equipment is ideal for the general lighting of foundries, assembly lines, machine shops, inspection departments and similar spaces because of its high efficiency.

Westinghouse alone offers complete 400-watt and 250-watt High Intensity Mercury lighting equipment, consisting of Ballast Equipment, lamps, and reflectors. For special applications and for floodlighting, Westinghouse maintains layout and planning facilities that are available on request.

DESIGNING THE INSTALLATION

Following is a method for designing High Intensity Mercury industrial lighting installations.

The procedure is divided into five steps:

1. Decide the footcandle illumination required. Refer to Table I.
2. Select the type of lighting unit best adapted to the location and the activity to be performed. See pages 6 through 23.
3. Decide the Conditions Factor. Refer to Table III for rating.
4. From the Table on the opposite page of the selected unit, determine the required spacing of the units to produce the desired illumination.
5. Check capacity of wiring. (Page 2).

1. Deciding the Footcandle Illumination Required

The footcandle values shown in Table I are sufficient not only to provide proper intensities for the work to be performed but have the additional purpose of preventing eyestrain and conserving vision. The values have been assigned on the basis of engineering experience and assume the average conditions found in practice. Where especially close attention to fine detail is required, more illumination is needed than where the process is essentially automatic or operated on a coarser scale.

2. Selecting the Type of Lighting Unit

There is a wide range of industrial units available for the special size and shape of the 400-watt and 250-watt High Intensity Mercury lamps. These units and their particular applications are illustrated and described in detail in following pages of this Catalog Section.

3. Determining the Conditions Factor

A room must be appraised first from the standpoint of its general proportions; second, from the color and the material of the walls and ceiling; and third, from the standpoint of its situation, whether it is located where dust, dirt, soot, smoke, or other similar elements are present which would tend to collect on, or in, the lighting units and thereby reduce efficiency. A simple table, Table III, has been prepared which gives a general summary of these conditions, and should be used to determine the Conditions Factor.

Note first of all the general proportions of the room, whether its width is approximately equal to or is twice, three or four times the ceiling height.

The illumination in any room is dependent upon the amount of light reflected from the walls and ceiling. White walls reflect more light than gray walls—

DESIGNING THE INSTALLATION—Continued

TABLE I

ILLUMINATION REQUIRED AT THE WORK

	Foot-candles
Where Discrimination of Detail is not Essential Handling material of a coarse nature; grinding clay products; rough sorting; coal and ash handling; foundry charging.	5
Where Slight Discrimination of Detail is Essential Rough machining; rough assembling; rough bench work; rough forging; grain milling.	10
Where Moderate Discrimination of Detail is Essential Medium bench and machine work; fine molding and core making; newspaper printing.	20
Where Close Discrimination of Detail is Essential Tool making; weaving; stitching and trimming.	30
Where Very Close Discrimination of Detail is Essential Electrotyping; glass cutting; polishing and inspecting.	50
Where Discrimination of Minute Detail is Essential Fine bench and machine work; fine inspecting; typesetting engraving.	100

gray walls reflect more light than black walls. Therefore, in appraising the color of the walls and ceiling three general classifications are used: light, medium, dark.

The third and final step is to decide whether or not the air is clean or subject to dusty, sooty or smoky conditions. This third consideration is referred to as a maintenance condition in that it has to do with the maintenance of the lighting unit. There is no definite table or guide to go by in selecting this condition except observation. This condition is classified as either Very Good or Fair.

By referring to Table III, with the room proportions, the classification of Light, Medium or Dark for color of the walls and ceiling, and Very Good or Fair for maintenance, the Conditions Factor can be easily determined. This factor is not a numerical one, but is given in terms of "Favorable", "Average" and "Unfavorable."

4. Decide Mounting Height and Spacing

The first step is to determine the proper location of outlets to obtain evenly distributed illumination over the room. The allowable spacing between outlets is dependent upon the mounting height of the units. The mounting height is the distance from the floor to the bottom of the reflector. Spacing between units should be approximately equal to the mounting height and in no case should the spacing be more than 1½ times the mounting height. The distance from the wall to the first row of outlets should be approximately one-half the distance between units.

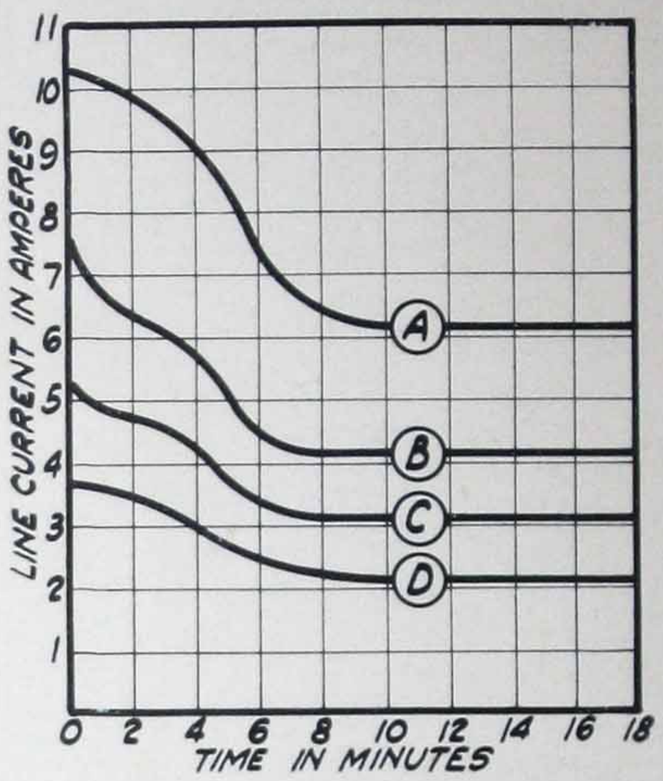
After the outlets have been located and the total number determined the "Area per outlet" is found by dividing the total floor area by the number of outlets.

$$\text{Area per Outlet} = \frac{\text{Total Area}}{\text{Number of Outlets}}$$

Locate the above figure in the column marked "Area per Outlet" in the table for the selected unit. In the column marked "Conditions Factor" select the factor previously determined (Favorable, Average or Unfavorable). Following horizontally to the right on this line the illumination in footcandles which will be provided will be found in the "Average Footcandles" column.

5. Check Capacity of Wiring

Excessive voltage drops in wiring should be avoided because they represent power losses. Wire which may be of sufficient size to pass the Underwriter's requirements and quite safe from the standpoint of fire hazard may not be adequate to avoid an excessive voltage drop. Because the wattage input to the lamp must be closely limited, transformers and reactors are equipped with several line taps to meet all common service voltages. The nearest tap to available line voltage should always be used.



Curve A—115 V. No PF Correction
Curve B—115 V. With PF Correction
Curve C—220 V. No PF Correction
Curve D—220 V. With PF Correction

The above Chart indicates graphically the line current characteristics of the 400-watt mercury reactors and transformers during the period in which the lamp is coming up to full normal operation. Note the difference in line current on 115-volt and 220-volt lines, with and without power factor correction. The lamp requires 10 or 12 minutes to reach a stable operating condition.

The starting and operating voltage of the 250-watt mercury lamp are considerably lower than for 400-watt lamp, and because of low power factor a reactor is

TABLE II

PER CENT LIGHT REFLECTED FROM TYPICAL WALLS AND CEILINGS

Surface	Class	Color	Light Reflected Per Cent
Paint	Light	White	81
Paint		Ivory	79
Paint		Cream	74
Caen Stone		Cream	69
Paint	Medium	Buff	63
Paint		Light Green	63
Paint		Light Gray	58
Caen Stone		Gray	56
Paint	Dark	Tan	48
Paint		Dark Gray	26
Paint		Olive Green	17
Paint		Light Oak	32
Paint		Dark Oak	13
Paint		Mahogany	8
Cement		Natural	25
Brick		Red	13

DESIGNING THE INSTALLATION—Continued

not recommended in series when service provides 208 to 240-volt range. Transformers with proper secondary voltage are, therefore, used for both 208 to 240-volt range of service and 107 to 123-volt range of service. If no condenser is provided to correct the power factor, the starting line current for 115-volt systems is approximately 7.25 amperes and the operating current is 5.65 amperes per unit. If the power factor is corrected the starting line current is approximately 3.0 amperes and the operating current is 2.85 amperes per unit.

For 230-volt systems the above current values for 250-watt units is reduced by 50%.

The above line currents for Transformers are for definite taps indicated. For other line taps of transformers the line current varies inversely as the voltage. The latter also applies for starting current of Reactors, or Reactor-Capacitors.

Example

It is desired to illuminate a machine shop in which rough machine work is done. The ceiling height is 13 feet. The ceiling and walls are light in color and the maintenance is very good. The size of the room is 30 feet wide and 45 feet long.

Solution

1. Decide the illumination required. Referring to Table I under Machine Shops it will be found that 10 footcandles are required for rough machine work.

2. Select the lighting unit. The ceiling height is 13 feet so the units must be mounted lower than 20 feet. The 250-watt Glassteel Diffuser is selected because of the mounting height and because maximum diffusion is desired. The units should be mounted as high above the floor as possible to reduce glare and give a more uniform light distribution.

TABLE III

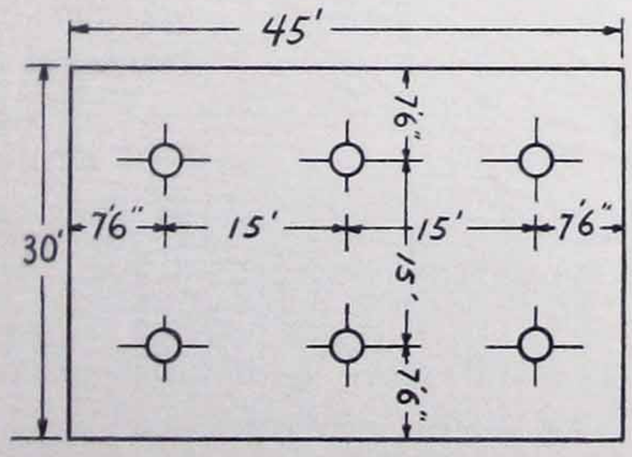
CONDITIONS FACTORS			
Proportions of Room	Color of Ceiling and Sidewalls	MAINTENANCE OF EQUIPMENT	
		Very Good	Fair
Width Approximately Four or More Times Ceiling Height	Light	Favorable	Favorable
	Medium	Favorable	Favorable
	Dark	Favorable	Average
Width Approximately Twice Ceiling Height	Light	Favorable	Average
	Medium	Favorable	Average
	Dark	Average	Unfavorable
Width Approximately Equal to Ceiling Height	Light	Average	Unfavorable
	Medium	Unfavorable	Unfavorable
	Dark	Unfavorable	Unfavorable

3. Decide the conditions factor. The width of the room is approximately twice the ceiling height. The ceiling and walls are light and the maintenance is very good. Using this data and referring to Table III the conditions factor is found to be "Favorable."

4. Determine spacing of lighting units. Refer to the 250-watt Glassteel Diffuser Table, page 13. In column headed "Average Footcandles" it is found that with a conditions factor of "Favorable", 11-14 footcandles will be provided with a spacing of 14¾ x 14¾ feet. The spacings therefore should be 14 or 15 feet. This spacing will be satisfactory as far as distributing the light uniformly is concerned since it is less than one and a half times the mounting height.

Draw a simple floor plan of the room to scale and on it layout the units symmetrically, using a spacing of 14 or 15 feet. Make the distance from the wall to each unit approximately one half the distance between units. Six units on 15 by 15 feet spacings will be required.

EXAMPLE



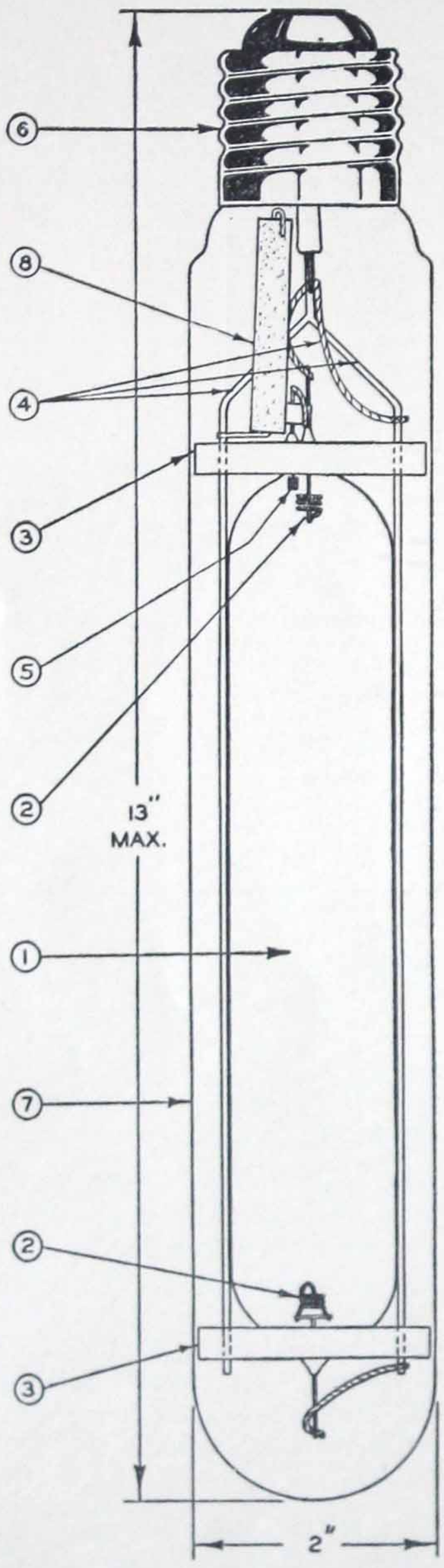
High Intensity Mercury Superimposed on Incandescents

Where poor voltage regulation prevails, or where color discrimination is necessary, auxiliary circuits of incandescent lamps can be installed, or the combination mercury and Mazda unit should be used. These circuits, or combination units, serve in an emergency and also provide the necessary color correction to the High Intensity Mercury Vapor installation.

In installations which utilize individual mercury and Mazda units, it is most desirable to alternate Mazda with the Mercury Vapor fixtures. In a room where there are three rows of units, the center row should be Mercury Vapor units and the outside rows should be Mazda units of a wattage depending on the color correction desired. Where a Mazda unit is located in each of the four corners of a room or bay, the Mercury Vapor unit is usually installed in the center.

400-WATT HIGH INTENSITY MERCURY VAPOR LAMP

TYPE H-1



1—ARC TUBE

2—ELECTRODES

3—SUPPORTING BANDS

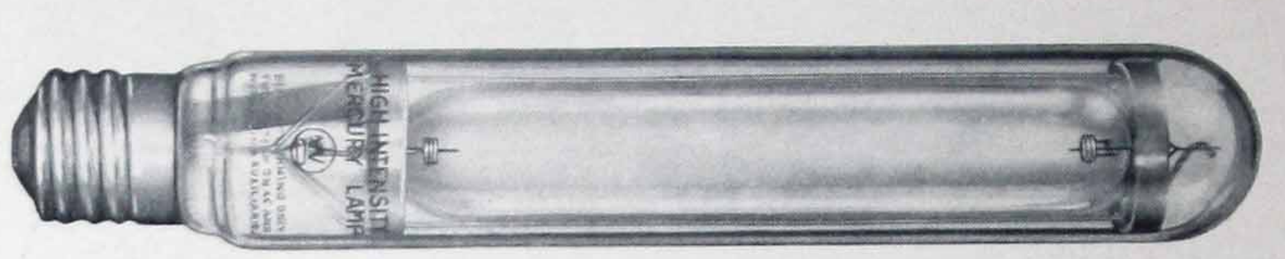
4—LEAD AND SUPPORT WIRES

5—STARTING ELECTRODE

6—MOGUL SCREW BASE

7—OUTER TUBE

8—RESISTOR



The 400-watt Westinghouse High Intensity Mercury Vapor lamp has an efficiency of approximately 40 lumens per watt. The lamp is 13″ long, 2″ in diameter, produces 16,000 lumens of light and consumes 400 watts.

The lamp consists of two tubular bulbs, one within the other. The inner bulb, wherein the arc is formed, is approximately 7″ long and 1⅜″ diameter and this tube is the real light source.

The lamp requires approximately 20 volts, 5 amperes for a period of 2 minutes after the arc is established. After 10 or 12 minutes, the normal operating condition is reached when the lamp requires approximately 150 volts, 2.9 amperes.

Burning Position

In order that the arc stream may be maintained in the center of the tube the lamp must be operated in a vertical position. A deviation greater than 10 degrees from the vertical will cause the arc stream to bow until it touches the wall of the tube which will soon melt and destroy the lamp.

Current Interruption

Should an interruption in the electric service take place while the lamp is in operation, the arc will be quenched and cannot be re-established until the lamp has cooled sufficiently to reduce the mercury vapor pressure to a point where arc is re-established. The cooling time required is approximately 5 minutes—but will vary with conditions.

Quality and Color—Visual Acuity

The light produced by the High Intensity Mercury Vapor lamp is made up mainly of wave lengths in the violet, green and yellow green portion of the visible spectrum. Most of the light produced, however, is radiated in the yellow green and green parts of the visible spectrum, near the eye's peak of sensitivity.

Objects of colors other than violet, green and yellow green, when lighted with High Intensity Mercury Vapor lamps, do not appear normal to the eye. Due to the lack of red wave lengths, red objects or those containing red will appear most distorted. A sufficient amount of Mazda light, rich in red, may be added where color discrimination is necessary.

ESSENTIAL DATA

Bulb	Tipless T-16
Base	ℳ 401 Mogul Screw
Max. Overall Length	13 Inches
Watts	400 ±10%
Lumens	16,000
*Lumens per Watt	40 ±10%
Average Life	2000 Hours
Frequency	60 Cycles
Light Center Length	7¾ Inches
†Burning Position	Base Up
Finish	Clear

* When tested in series with an accepted reactor or across an accepted transformer with the line voltage corresponding to the tap used.

† Lamps for base down burning position may be had on request.

250-WATT HIGH INTENSITY MERCURY VAPOR LAMP TYPE H-2

The 250-watt Westinghouse High Intensity Mercury Vapor Lamp has an efficiency of approximately 30 lumens per watt. The lamp is 8″ long, 1⅛″ in diameter, produces approximately 7,500 lumens of light and consumes 250 watts.

The 250-watt lamp consists of a single tube with a 5″ light center, and is equipped with a medium screw base. It requires approximately 20 volts, 5 amperes for a period of 2 minutes after the arc is established.

After 10 or 12 minutes, the normal operating condition is reached when the lamp requires approximately 70 volts, 3.9 amperes.

Burning Position

Unlike the 400-watt size, the 250-watt High Intensity Mercury lamp can be operated in any burning position.

Current Interruption

The 250-watt lamp will not immediately relight when extinguished by a momentary interruption of current. The lamp must cool sufficiently to reduce the mercury vapor pressure to a point where the arc is re-established. The time required for starting will vary from 3 to 5 minutes.

Enclosing Equipment

Because the 250-watt lamp is a single tube device, it is more susceptible to cooling effects of moving air. To insure maximum light output it is therefore recommended the lamp be operated in enclosing equipment to protect it from drafts.

Color and Quality— Visual Acuity

The color of the light produced by the 250-watt lamp is practically the same as that produced by the 400-watt size, except that it is slightly less yellow.

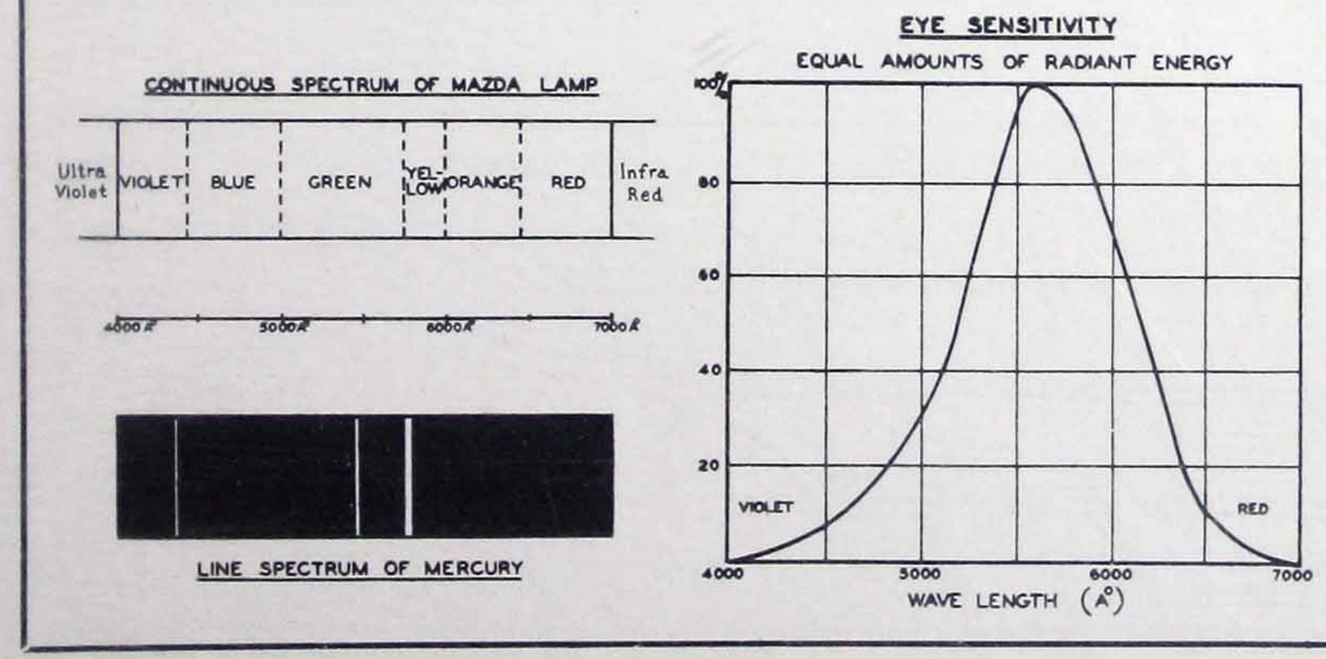
Where a fair approximation of daylight color is desirable, the 250-watt lamp will also combine equally well with light of the Mazda lamps.

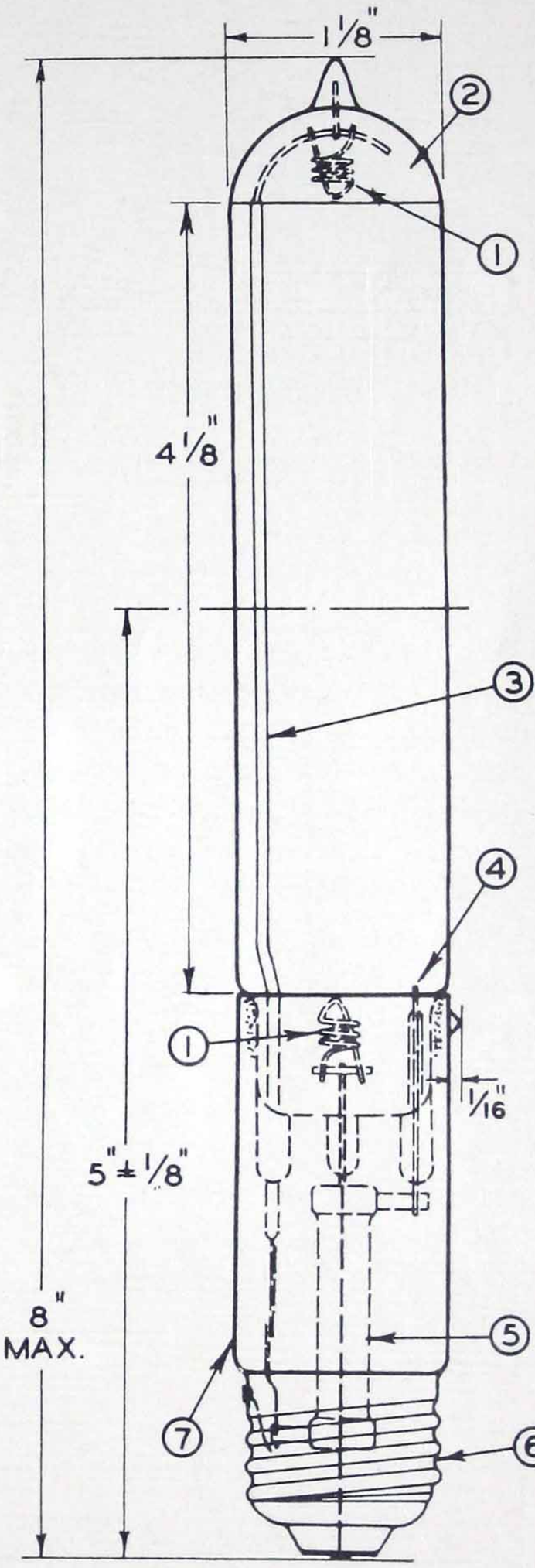
ESSENTIAL DATA

Bulb	T9 Tipped
Base	Medium Screw
Max. Overall Length	8 Inches
Watts	250 ±10%
Lumens	7,500
*Lumens per Watt	30 Initial ±10%
Average Life	2000 Hours
Frequency	60 Cycle
Light Center Length	5 Inches
Burning Position	Any
Finish	Clear, Coated End

*When operated in conjunction with an accepted transformer with the line voltage corresponding to the tap used

SPECTRUM AND EYE SENSITIVITY CHART FOR 400- AND 250-WATT MERCURY LAMPS





1—ELECTRODES

2—PLATINIZED END

3—GLASS ENCASED LEAD WIRE

4—STARTING ELECTRODE

5—STARTING ELECTRODE RESISTOR

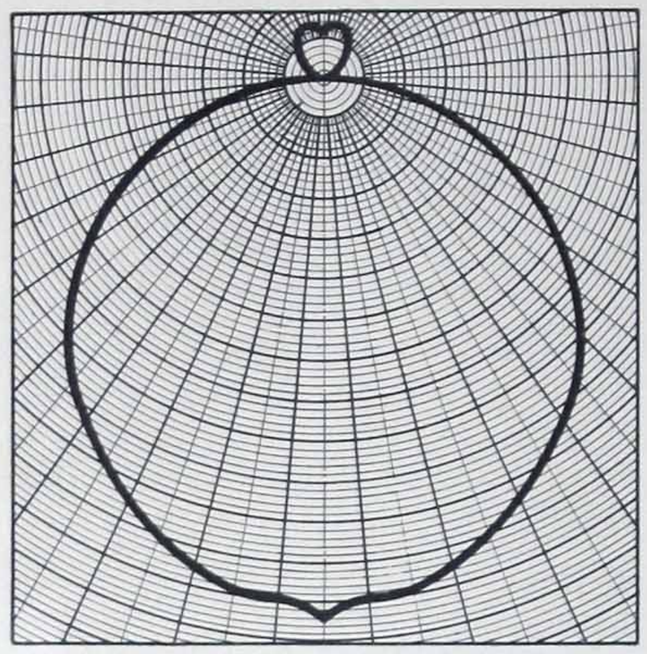
6—MEDIUM SCREW BASE

7—OPAQUE GLASS EXTENSION

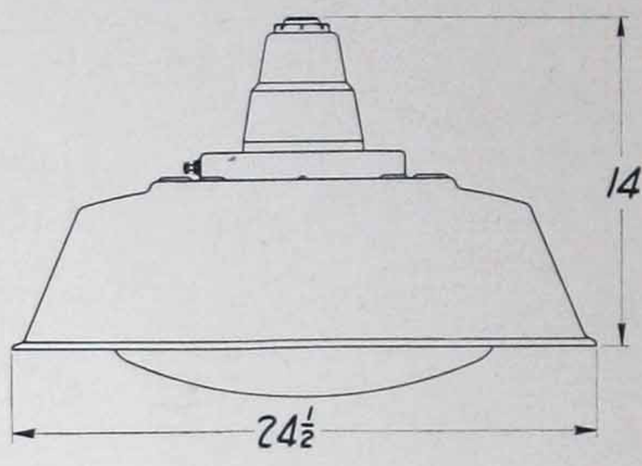
HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

400-WATT GLASSTEEL DIFFUSER
FOR LOW MOUNTING

400-Watt Glassteel Diffuser, Reflector and Globe



Vertical Distribution with 400-Watt Glassteel Diffuser



Dimensions in Inches
Glassteel Diffuser

The Westinghouse Glassteel Diffuser is designed to properly distribute the light from the 400-watt High Intensity Mercury lamp where the mounting height is under 18 feet. For mounting heights of 18 feet and over, the Westinghouse High, Medium and Low mounting aluminum reflectors, as described, should be used.

The Glassteel Diffuser consists of a white porcelain enameled reflector which directs the light downward, and a diffusing glass globe. The reflector has six openings at the top which permit some light to reach the ceiling, thus reducing the contrast between the ceiling and lighting unit. The diffusing glass globe conceals the bright light source, thereby minimizing glare and softening shadows.

The High Intensity Glassteel Diffuser is especially suitable for lighting machine shops, plating and polishing rooms, assembly lines and departments, pattern shops, printing plants, tool rooms, stamping departments, finishing and inspection departments and welding forge and heat treating rooms.

Construction

High Intensity Glassteel Diffuser reflector is drawn from 22 gauge iron sheet and finished with one ground coat and two white coats of porcelain enamel inside and outside.

The diffusing globe is of single layer homogeneous glass and is equipped with a copper globe protecting ring. It is supported in the reflector by two bayonet pins and two brass set screws with lock nuts.

The Mogul type skeleton socket with high heat wax and nickel-plated interior is held in place by a cast brass adapter which is locked to the reflector by means of a special cast aluminum cap.

Accessories

Since the 400-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and the accessories, the Westinghouse Safe-Change Hanger is recommended

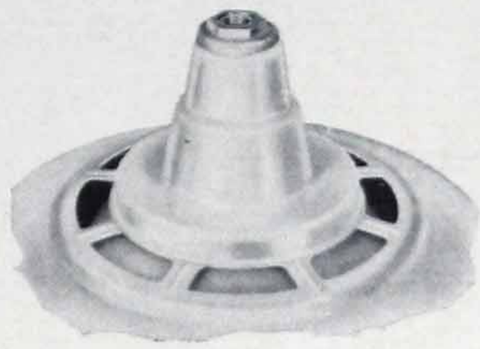
Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Weight	Style No. *† for ½-inch Conduit
GLASSTEEL DIFFUSER COMPLETE WITH SOCKET AND GLOBE					
400	24	16	2	65	785 650
GLASSTEEL DIFFUSER REFLECTOR AND SOCKET ONLY					
400	24	14	2	50	789 584
GLASSTEEL DIFFUSER GLOBE ONLY					
400	16	10	2	15	888 335

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.

See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

400-WATT GLASSTEEL DIFFUSER FOR LOW MOUNTING



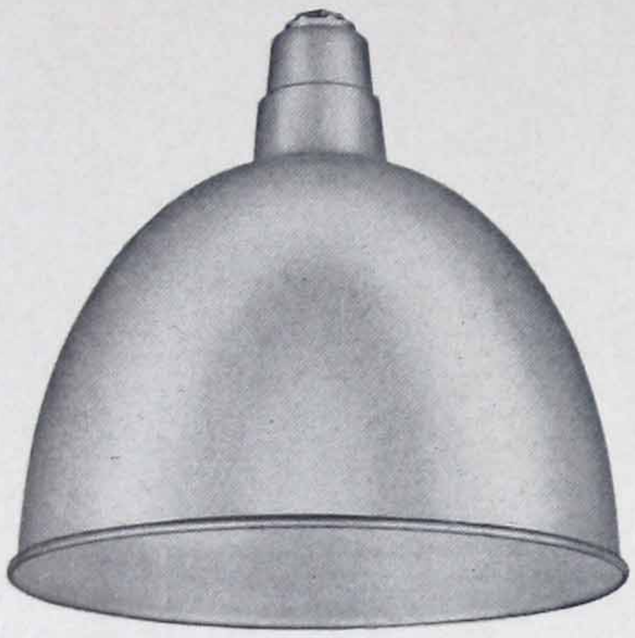
CONDUIT MOUNTING
ONE PIECE REFLECTOR

Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 400-Watt
10	11 x 11	110–125	Favorable Average Unfavorable	44–55 33–44 27–34
10½	11½ x 11½	125–145	Favorable Average Unfavorable	37–50 30–37 23–30
11½	12½ x 12½	145–170	Favorable Average Unfavorable	34–43 26–34 21–26
11½	13½ x 13½	170–200	Favorable Average Unfavorable	30–37 21–30 17–21
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	24–31 18–24 14–18
13	15½ x 15½	230–260	Favorable Average Unfavorable	21–28 17–21 13–17
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	20–24 14–20 11–14
14½	18 x 18	300–340	Favorable Average Unfavorable	17–20 13–17 10–13
15½	19 x 19	340–390	Favorable Average Unfavorable	14–18 11–14 9–11
16½	20½ x 20½	390–440	Favorable Average Unfavorable	13–17 10–13 7.5–10
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	10–13 7.5–10 6.5–7.5

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

400-WATT ALUMINUM REFLECTORS

FOR LOW, MEDIUM AND HIGH MOUNTING



400-Watt Aluminum Reflector

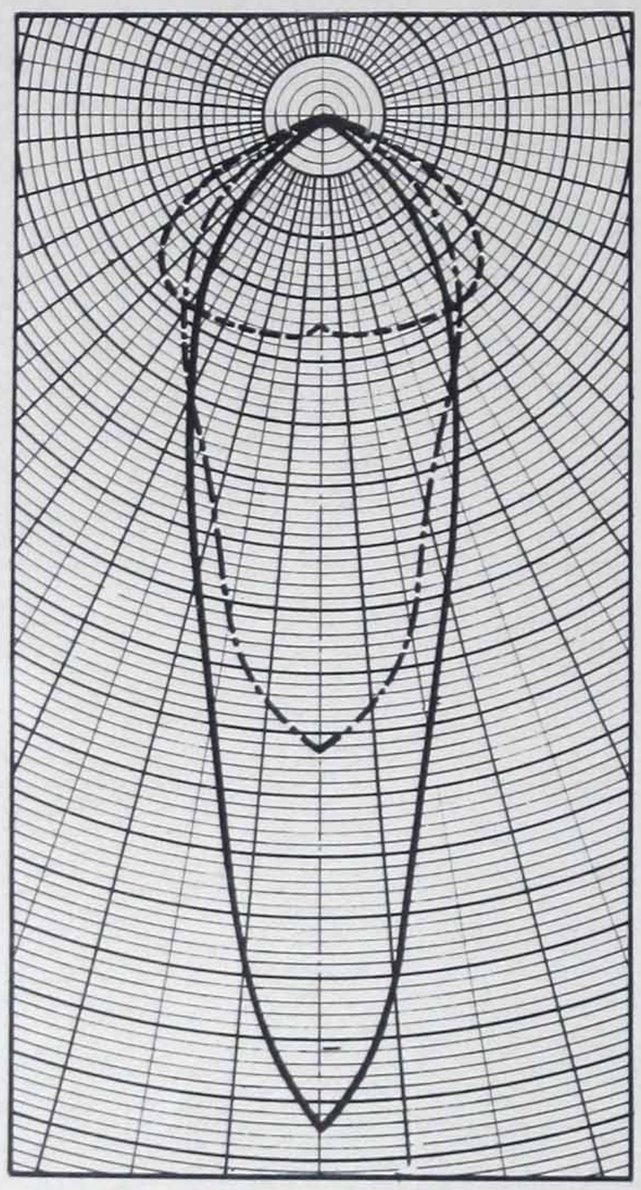
Westinghouse aluminum reflectors are designed to properly distribute light from the 400-watt High Intensity Mercury lamp where the mounting height is 18 feet and over.

These units are particularly suited for the general lighting of foundries, machine shops, stamping departments, power plants, receiving and shipping departments and sheet metal departments.

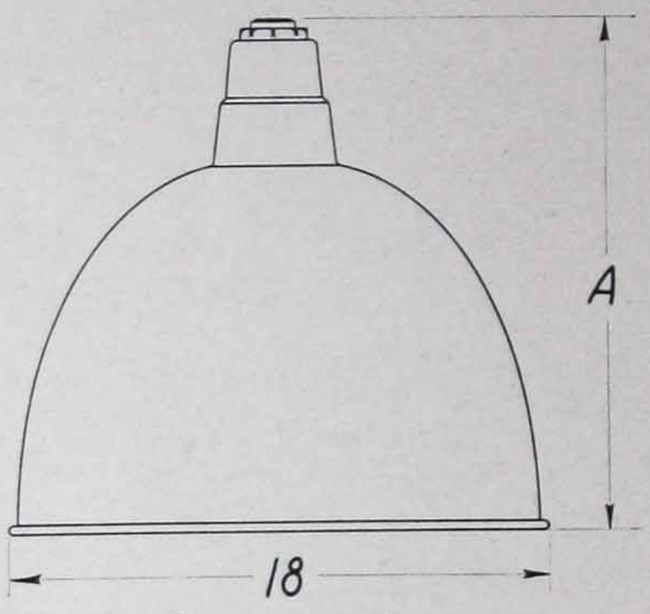
Construction

The high mounting reflectors are made from 14 gauge commercially pure aluminum sheet. Their shape is such as to make them especially strong and durable after fabrication.

The special Mogul type socket is rigidly mounted in the hood to properly position the lamp in the reflector. Various types of hoods are available for mounting as listed below. Complete descriptions of the applicable hoods will be found in catalog sections 61-140 and 61-153.



Vertical Distribution with 400-Watt Aluminum Reflectors at 25, 35 and 50 Feet Mounting Heights



Dimensions in Inches

Description	Dim. A
Low Mounting	17⅛″
Medium Mounting	18⅛″
High Mounting	18⅝″

The entire reflector is Alzaked for greater permanence and ease of cleaning.

Accessories

Since the 400-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and the accessories, the Westinghouse Safe-Change hanger is recommended.

Glass covers are recommended. Order separately as listed below.

Description	Mounting Height in Feet	Mercury Lamp Size in Watts	Diam. Inches	Depth Inches	Standard Package Quantity	Standard Package Weight	Style No. *† ½-Inch Conduit	Style No. *† 4-Inch Outlet Box
ONE-PIECE ALUMINUM REFLECTORS COMPLETE WITH SOCKET								
Low Mounting	18 to 25	400	18	17⅛	4	30	789 585	....
Medium Mounting	26 to 35	400	18	18⅛	4	30	789 587	....
High Mounting	36 and over	400	18	18⅝	4	30	789 588	....
WEMCO QUICK-CHANGE ALUMINUM REFLECTORS COMPLETE WITH HOOD								
Low Mounting	18 to 25	400	18	17⅛	4	30	890 059	890 062
Medium Mounting	26 to 35	400	18	18⅛	4	30	890 060	890 063
High Mounting	36 and over	400	18	18⅝	4	30	890 061	890 064
ALUMINUM WEMCO QUICK-CHANGE REFLECTORS ONLY								
Low Mounting	18 to 25	400	18	15¼	4	26	888 779	888 779
Medium Mounting	26 to 35	400	18	16¼	4	26	888 780	888 780
High Mounting	36 and over	400	18	16¾	4	26	888 781	888 781
WEMCO QUICK-CHANGE HOODS ONLY								
.....	.....	400	..	1⅞	10	10	347 919	347 920
HINGED GLASS COVER ONLY								
.....	.....	400	18	....	4	20	341 067	341 067
SNAP GLASS COVER ONLY								
.....	.....	400	18	....	4	20	890 036	890 036
GLASS LENS ONLY								
.....	.....	400	18	....	4	16	341 070	341 070

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.

† **Important Notice:** For steel mill service where acid conditions are encountered, glass covers, described on page 28, must be used. Also, reflectors will be provided with a special steel mill acid-resisting finish—specify on order—Similar to above styles except with special steel mill finish. ¾-inch can be furnished when specified.

See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

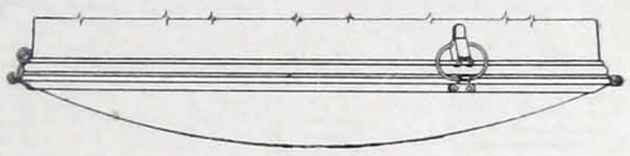
400-WATT ALUMINUM REFLECTORS—LOW, MEDIUM, HIGH MOUNTING

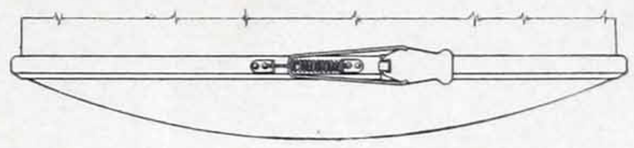
CONDUIT MOUNTING
ONE PIECE REFLECTOR

CONDUIT MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

OUTLET BOX MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

HINGED GLASS COVER



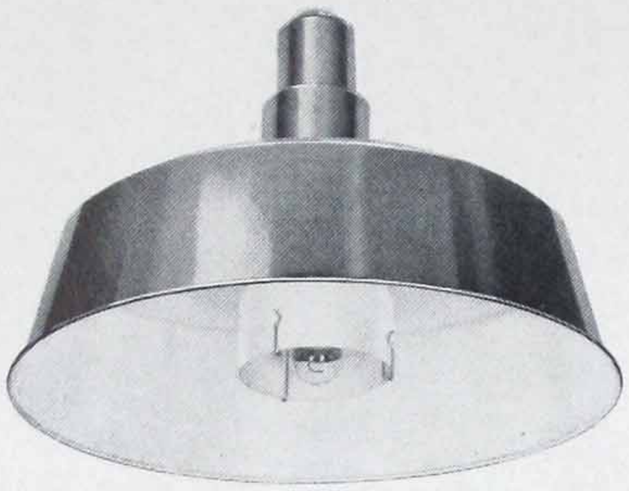


SNAP GLASS COVER

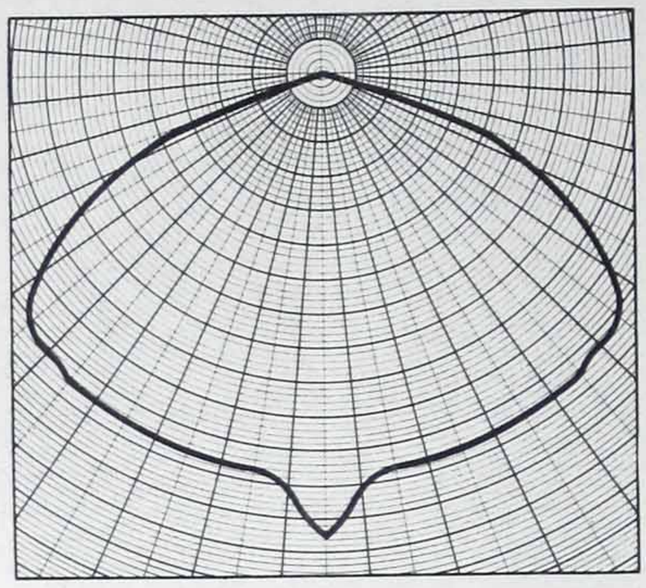
APPROXIMATE MOUNTING HEIGHT			Approximate Spacing (Feet)	Area Per Outlet (Sq. Ft.)	Conditions Factor	AVERAGE FOOTCANDLES		
Low Mounting (Feet)	Medium Mounting (Feet)	High Mounting (Feet)				Low Mounting	Medium Mounting	High Mounting
			12 x 12	140–160	Favorable Average Unfavorable			33–38 26–30 20–23
			13 x 13	160–185	Favorable Average Unfavorable			28–33 22–26 17–20
			14 x 14	185–210	Favorable Average Unfavorable		30–35 24–27 18–21	25–28 20–22 15–17
			15 x 15	210–240	Favorable Average Unfavorable	34–39 29–33 21–24	26–30 21–24 16–18	22–25 17–20 13–15
			16 x 16	240–270	Favorable Average Unfavorable	31–35 25–29 18–21	24–26 19–21 14–16	19–22 15–17 12–13
			17 x 17	270–300	Favorable Average Unfavorable	28–31 23–25 16–18	21–24 17–19 13–14	17–19 14–15 10.5–12
		36′ to 50′	18 x 18	300–340	Favorable Average Unfavorable	24–28 20–23 15–17	19–21 15–17 11–13	16–19 12–14 9.5–10.5
			19 x 19	340–390	Favorable Average Unfavorable	21–25 18–20 13–15	16–19 13–15 10–11	14–16 11–12 8–9.5
	26′ to 35′		20 x 20	380–430	Favorable Average Unfavorable	19–22 16–18 12–13	15–17 12–13.5 9–10	12–14 9.5–11 7.5–8
			21 x 21	420–470	Favorable Average Unfavorable	18–20 15–16 10–12	13.5–15 11–12 8–9	11–12.5 9–10 7–7.5
18′ to 25′			22 x 22	460–520	Favorable Average Unfavorable	16–18 13–15 10–11	12–14 10–11 7.5–8.5	10–11.5 8–9 6–7
			24 x 24	540–590	Favorable Average Unfavorable	14–16 11–13 8–9	11–12 8.5–9.5 6.5–7	9–10 7–8 5.5–6
			26 x 26	640–690	Favorable Average Unfavorable	12–13 10–11 7–8	9.5–10 7.5–8 5.5–6	7.5–8.5 6–6.5 4.5–5
			28 x 28	740–790	Favorable Average Unfavorable	10–11 8.5–9.5 6–7	8–9 6.5–7 5–5.5	
			30 x 30	890–940	Favorable Average Unfavorable	8.5–9.5 7.5–8 5–5.5	7–7.5 5.5–6 4–4.5	
			32 x 32	990–1040	Favorable Average Unfavorable	8–8.5 6.5–7 4.5–5		
			34 x 34	1140–1190	Favorable Average Unfavorable	7–7.5 6–6.5 4–5		

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

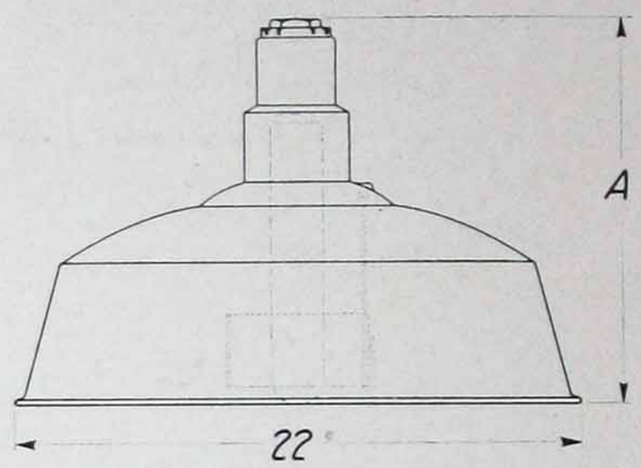
400-WATT DOME REFLECTOR
FOR LOW MOUNTING



400-Watt Dome Reflector



Vertical Distribution with 400-Watt Dome Reflector



Dimensions in Inches
Dome Reflector

Description	Dim. A
One Piece	15″
Wemco Quick-Change	15⅜″

The Westinghouse Dome Type Low Mounting reflector is designed for use with the 400 Watt High Intensity Mercury lamp for general industrial lighting applications. The shape of the reflector is similar to the well known RLM Mazda reflector. It is equipped with a monax glass cylinder which surrounds the lower portion of the lamp providing the same angle of cut-off (72½°) as the RLM. It should be used on mounting heights of 10 to 18 feet for good general illumination. The proper spacing of units to give the desired intensity can be found on the opposite page.

Construction

The reflector is drawn from 22 gauge iron sheet, and porcelain enameled as follows: one ground coat all over, two white coats inside and one green coat outside with black bead. A glass collar of monax homogeneous glass is supported by three steel cadmium plated supports locked securely in the top portion of reflector. Lamp or collar or both may easily be removed without removing supports.

The special mogul skeleton socket with high heat wax and nickel plated interior is rigidly mounted in the hood to properly position the lamp in the reflector. Various types of hoods are available for mounting as listed below.

Accessories

Since the 400-watt High Intensity Mercury Lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and ballast equipment, the Westinghouse Safe-Change hanger is recommended.

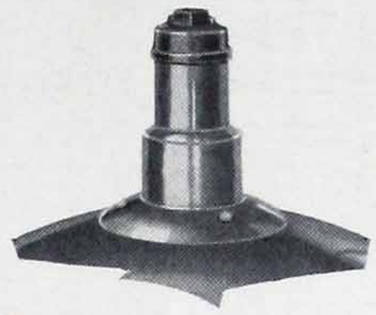
Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No. *† ½-inch Conduit	Style No. *† 4-inch Outlet Box
ONE-PIECE DOME REFLECTOR COMPLETE WITH SOCKET AND GLASS COLLAR						
400	22	15	4	48	890 005	....
WEMCO QUICK-CHANGE DOME REFLECTOR COMPLETE WITH HOOD AND GLASS COLLAR						
400	22	15⅜	4	48	890 008	890 009
WEMCO QUICK-CHANGE DOME REFLECTOR ONLY						
400	22	13½	4	44	890 007	890 007
WEMCO QUICK-CHANGE HOODS ONLY						
400	....	1⅞	10	10	347 919	347 920
GLASS COLLAR ONLY						
400	5½	2 15/16	4	2	888 876	888 876

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾ inch can be furnished when specified.
See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

400-WATT DOME REFLECTOR FOR LOW MOUNTING

CONDUIT MOUNTING
ONE PIECE REFLECTOR



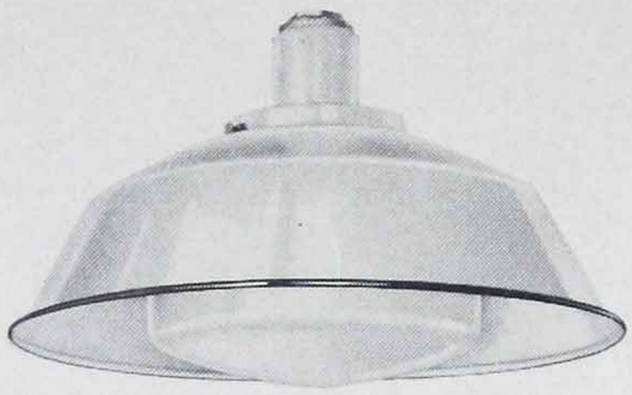
CONDUIT MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

OUTLET BOX MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

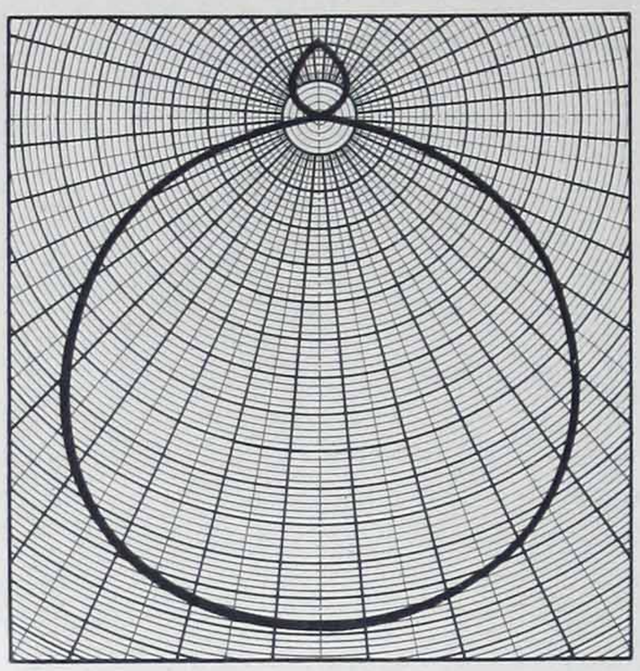
Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 400-Watt
10	11 x 11	110–125	Favorable Average Unfavorable	48–59 37–48 33–37
10½	11½ x 11½	125–145	Favorable Average Unfavorable	40–50 33–40 27–33
11½	12½ x 12½	145–170	Favorable Average Unfavorable	34–45 27–34 24–27
11½	13½ x 13½	170–200	Favorable Average Unfavorable	30–37 24–30 19–24
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	25–33 19–25 16–19
13	15½ x 15½	230–260	Favorable Average Unfavorable	22–28 18–22 15–18
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	19–25 15–19 13–15
14½	18 x 18	300–340	Favorable Average Unfavorable	18–21 13–18 10–13
15½	19 x 19	340–390	Favorable Average Unfavorable	15–18 10–15 9–10
16½	20½ x 20½	390–440	Favorable Average Unfavorable	13–16 10–13 7–9
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	12–15 9–12 6–7

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

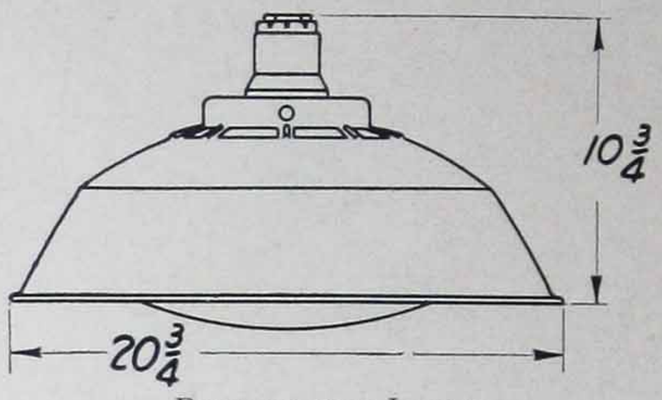
250-WATT GLASSTEEL DIFFUSER
FOR LOW MOUNTING



250-Watt Glassteel Diffuser Reflector and Globe



Vertical Distribution with 250-Watt Glassteel Diffuser



Dimensions in Inches
Glassteel Diffuser

The Westinghouse Glassteel Diffuser is designed to properly distribute the light from the 250-watt High Intensity Mercury lamp where the mounting height is under 18 feet. In general this unit can be mounted at practically the same spacings and mounting heights as the standard 300-500 watt Mazda Glassteel Diffuser.

The Glassteel Diffuser consists of a white porcelain enameled reflector which directs the light downward, and a diffusing glass globe. The reflector has six openings at the top which permit some light to reach the ceiling, thus reducing the contrast between the ceiling and lighting unit. The diffusing glass globe conceals the bright light source, thereby minimizing glare and softening shadows.

The High Intensity Glassteel Diffuser is especially suitable for lighting machine shops, plating and polishing rooms, assembly lines and departments, pattern shops, printing plants, tool rooms, stamping departments, finishing and inspection departments and welding forge and heat treating rooms.

Construction

High Intensity Glassteel Diffuser reflector is drawn from 22 gauge iron sheet and porcelain enameled as follows: one ground coat all over and two white coats of porcelain enamel inside and outside.

The diffusing globe is of single layer homogeneous glass and is provided with a copper globe protecting ring.

Various types of hoods are available for mounting as listed below. Complete descriptions of the applicable hoods can be found in Catalog Sections 61-140 and 61-153.

Since the 250-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and the ballast equipment, the Westinghouse Safe-Change Hanger is recommended.

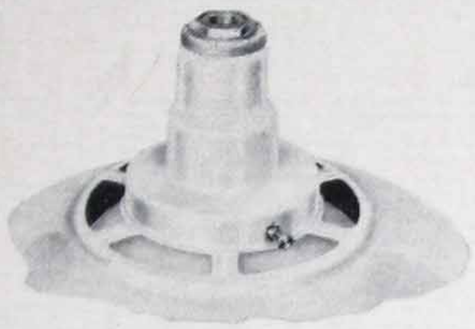
Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No.*† ½-inch Conduit	Style No.*† 4-inch Outlet Box
ONE-PIECE GLASSTEEL DIFFUSER COMPLETE WITH SOCKET AND GLOBE						
250	20¾	11	4	60	890 018	....
ONE-PIECE GLASSTEEL DIFFUSER REFLECTOR AND SOCKET ONLY						
250	20¾	10¾	4	45	890 019	....
WEMCO QUICK-CHANGE GLASSTEEL DIFFUSER COMPLETE WITH HOOD AND GLOBE						
250	20¾	11⅛	4	60	890 020	890 021
WEMCO QUICK-CHANGE GLASSTEEL DIFFUSER REFLECTOR ONLY						
250	20¾	8⅛	4	40	890 022	890 022
WEMCO QUICK-CHANGE HOODS ONLY						
250	....	1⅞	10	10	347 919	347 920
GLASSTEEL DIFFUSER GLOBE ONLY						
250	12	....	4	15	888 334	888 334

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

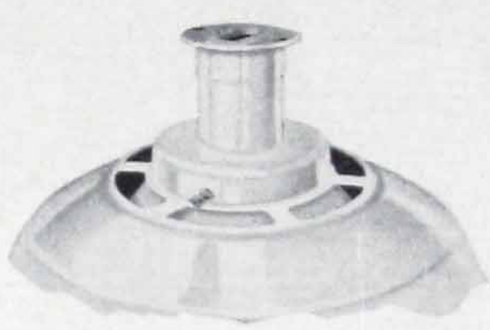
250-WATT GLASSTEEL DIFFUSER

FOR LOW MOUNTING



CONDUIT MOUNTING
ONE PIECE REFLECTOR

CONDUIT MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD



OUTLET BOX MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 250-Watt
7½	7¾ x 7¾	55–65	Favorable Average Unfavorable	40–52 30–40 24–31
8½	8½ x 8½	65–75	Favorable Average Unfavorable	34–42 25–34 20–25
8½	9 x 9	75–85	Favorable Average Unfavorable	30–38 22–29 18–22
9	9½ x 9½	85–95	Favorable Average Unfavorable	27–34 20–27 16–20
9½	10 x 10	95–110	Favorable Average Unfavorable	25–32 18–25 16–18
10	11 x 11	110–125	Favorable Average Unfavorable	21–27 16–21 13–16
10½	11½ x 11½	125–145	Favorable Average Unfavorable	18–24 14–18 11–14
11½	12½ x 12½	145–170	Favorable Average Unfavorable	17–21 13–17 10–13
11½	13½ x 13½	170–200	Favorable Average Unfavorable	14–17 10–14 9–10.5
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	11–14 9–11 7.5–9
13	15½ x 15½	230–260	Favorable Average Unfavorable	10.5–12.5 8.5–10 6–7.5
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	10–11 7–8.5 5.5–6.5
14½	18 x 18	300–340	Favorable Average Unfavorable	7–10 5.5–7 5–5.5
15½	19 x 19	340–390	Favorable Average Unfavorable	6.5–8.5 5–5.5 4–5
16½	20½ x 20½	390–440	Favorable Average Unfavorable	5.5–7 4–5.5 3.5–4
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	5–5.5 3.5–5 3–3.5

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

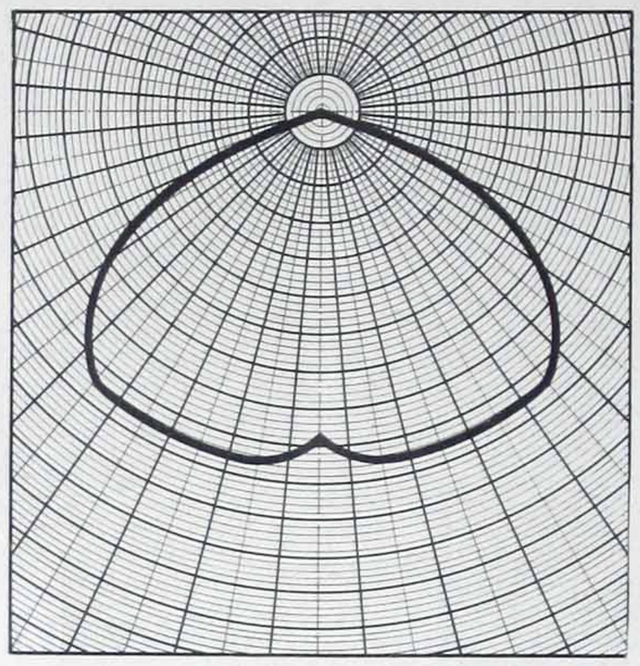
250-WATT ALUMINUM REFLECTOR

FOR LOW MOUNTING

250-Watt Aluminum Reflector and Glass Cover

Westinghouse Enclosed Aluminum Dome Type Low Mounting units provide intensive general illumination where the Mounting Light is not over 20 feet. Higher intensities are provided on the working plans, with minimum losses on the side walls.

The complete unit consists of an Alzaked Deep Bowl Type Aluminum reflector, a dust-tight cover, and various types of hoods, such as One-Piece and Wemco Quick-Change, for ½" conduit and outlet box mounting. Complete descriptions of the applicable hoods will be found in Catalog Sections 61-140 and 61-153.

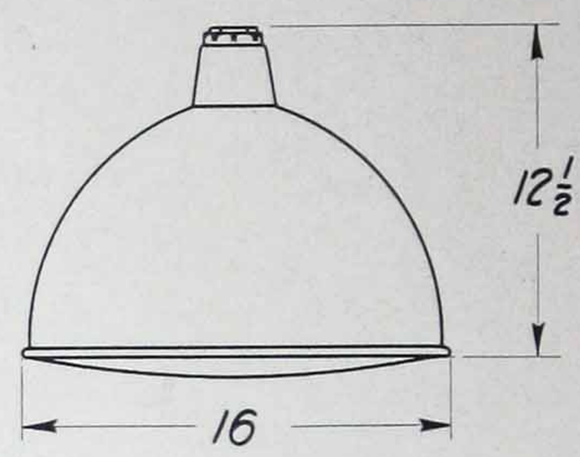


Vertical Distribution with 250-Watt Aluminum Reflector

Construction

The reflectors are made from 16 gauge commercially pure etching grade aluminum sheet. The medium socket with high heat wax and nickel plated interior is rigidly mounted in the hood to properly locate the lamp in the reflector.

The clear glass cover is hinged directly to the reflector bead, supported at three points. It is released by unsnapping two latches. A heavy waterproof felt



Dimensions in Inches
Aluminum Reflector

provides a gasket between reflector and lens.

The entire reflector is Alzaked for greater permanence and ease of cleaning.

Accessories

Since the 250-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and the ballast equipment, the Westinghouse Safe-Change hanger is recommended.

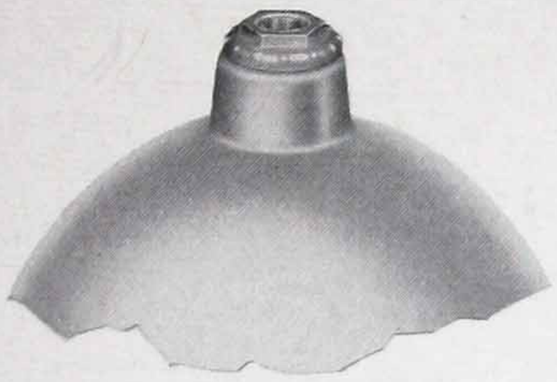
Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No.*† ½-inch Conduit	Style No.*† 4-inch Outlet Box
ONE-PIECE ALUMINUM REFLECTOR COMPLETE WITH SOCKET AND HINGED COVER						
250	16	14	4	40	890 023	.....
ONE-PIECE ALUMINUM REFLECTOR AND SOCKET ONLY						
250	16	12½	4	25	890 024	.....
WEMCO QUICK-CHANGE ALUMINUM REFLECTOR COMPLETE WITH HOOD AND HINGED COVER						
250	16	14⅛	4	40	890 025	890 026
WEMCO QUICK-CHANGE ALUMINUM REFLECTOR ONLY						
250	16	10¾	4	20	890 027	890 027
WEMCO QUICK-CHANGE HOODS ONLY						
250	....	1⅞	10	10	347 919	347 920
HINGED GLASS COVER ONLY						
250	16	....	4	14	341 065	341 065
GLASS LENS ONLY						
250	16	....	4	12	341 069	341 069

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT ALUMINUM REFLECTOR

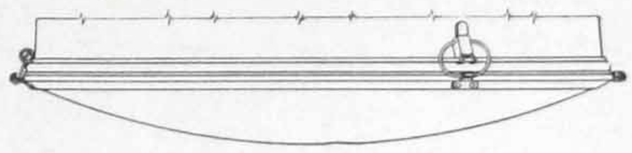
FOR LOW MOUNTING



CONDUIT MOUNTING
ONE PIECE REFLECTOR

CONDUIT MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

OUTLET BOX MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD



HINGED GLASS COVER

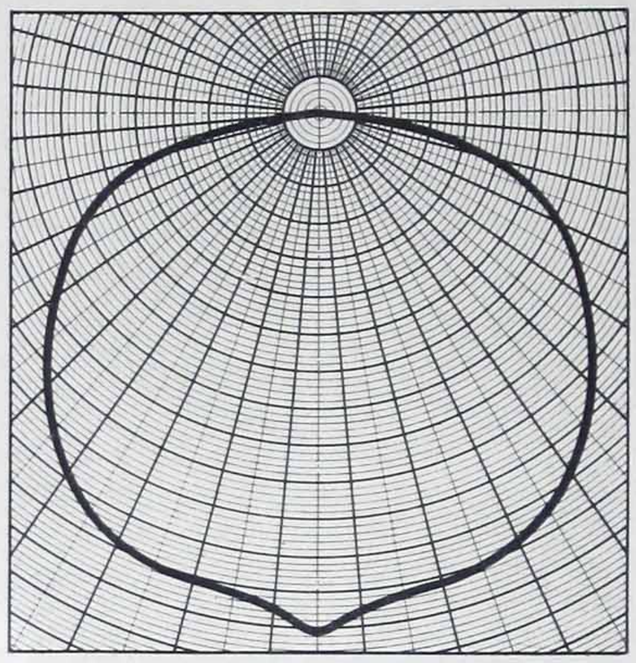
Mounting Height (Feet)	Approximate Spacing (Feet)	Area Per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 250-Watt
▲	8 x 8	60–70	Favorable Average Unfavorable	52–60 43–50 32–38
	9 x 9	75–85	Favorable Average Unfavorable	42–48 35–40 27–30
	10 x 10	95–110	Favorable Average Unfavorable	33–38 27–32 20–24
	11 x 11	115–130	Favorable Average Unfavorable	28–31 23–26 17–20
	12 x 12	140–160	Favorable Average Unfavorable	23–26 19–22 14–16
	13 x 13	160–185	Favorable Average Unfavorable	20–23 16–19 12–14
	14 x 14	185–210	Favorable Average Unfavorable	17–20 14–16 11–12
10′ to 20′	15 x 15	210–240	Favorable Average Unfavorable	15–17 12.5–14 9.5–11
	16 x 16	240–270	Favorable Average Unfavorable	13–15 11–12.5 8.5–9.5
	17 x 17	270–300	Favorable Average Unfavorable	12–13 10–11 7.5–8.5
	18 x 18	300–340	Favorable Average Unfavorable	10–12 9–10 6.5–7.5
	19 x 19	340–390	Favorable Average Unfavorable	9–10 8–9 6–6.5
▼	20 x 20	380–430	Favorable Average Unfavorable	8.5–9 7–8 5.5–6

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

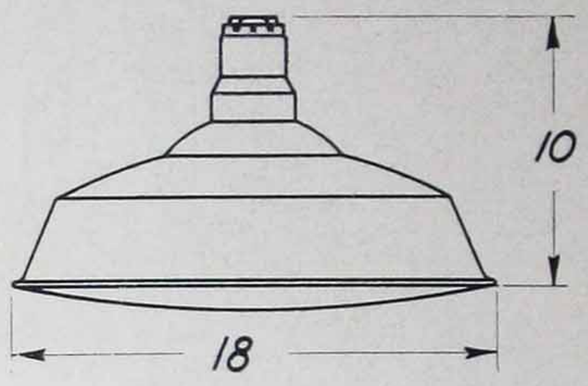
250-WATT DOME REFLECTOR

FOR LOW MOUNTING

250-Watt Dome Reflector and Glass Cover



Vertical Distribution with 250-Watt Dome Reflector



Dimensions in Inches
Dome Reflector

For general industrial lighting applications where mounting heights of from 8 to 18 feet are encountered the Westinghouse Enclosed Dome Type Reflector for 250-Watt Mercury lamp should be used.

It consists of an 18″ diameter porcelain enameled dome type reflector of the RLM shape with various types of hood mountings, and a dust tight hinged glass cover. The convex lens used in the cover is acid etched on the inside and smooth on the outside. The entire assembly provides a wide uniform distribution of light so necessary for low mounting types of reflectors, and the diffusing lens minimizes the glare from the lamp.

Construction

The reflector is drawn from 24 gauge iron sheet. One ground coat of porcelain enamel is applied all over, two coats white porcelain enamel inside and one green coat outside with black bead provide the reflecting surface and covering. A medium socket with high heat wax and nickel plated interior is rigidly mounted in the hood to properly locate the lamp in the reflector. Various types of hoods are available for mounting as listed below. Complete descriptions of the hoods can be found in Catalog Sections 61-140 and 61-153.

The glass cover is hinged directly to the reflector bead, supported at three points. It is released by unsnapping two latches. A heavy water proof felt provides a gasket between reflector and lens.

Accessories

Since the 250-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

To provide greater flexibility and ease of maintenance between the fixture and the ballast equipment, the Westinghouse Safe-Change hanger is recommended.

Mounting Height in Feet	Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Wt.	Style No.*† ½-inch Conduit	Style No.*† 4-inch Outlet Box
ONE-PIECE DOME REFLECTOR COMPLETE WITH SOCKET AND HINGED COVER							
250	18	11 5/16	5	55	..	890 030‡	....
ONE-PIECE DOME REFLECTOR AND SOCKET ONLY							
250	18	10	5	30	..	890 031	....
WEMCO QUICK-CHANGE DOME REFLECTOR COMPLETE WITH HOOD AND HINGED COVER							
250	18	11 7/16	5	55	..	890 032‡	890 033‡
WEMCO QUICK-CHANGE DOME REFLECTOR ONLY							
250	18	7 7/8	5	26	..	890 034	890 034
WEMCO QUICK-CHANGE HOODS ONLY							
250	....	1 7/8	10	10	..	347 919	347 920
HINGED GLASS COVER ONLY							
250	18	....	5	23	..	789 314	789 314
GLASS LENS ONLY							
250	18	....	5	19	..	789 093	789 093

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
‡ If clear lens is desired order similar to above Complete Unit styles except with clear lens. See Price List for deduction.
See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT DOME REFLECTOR

FOR LOW MOUNTING

CONDUIT MOUNTING
ONE PIECE REFLECTOR

CONDUIT MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

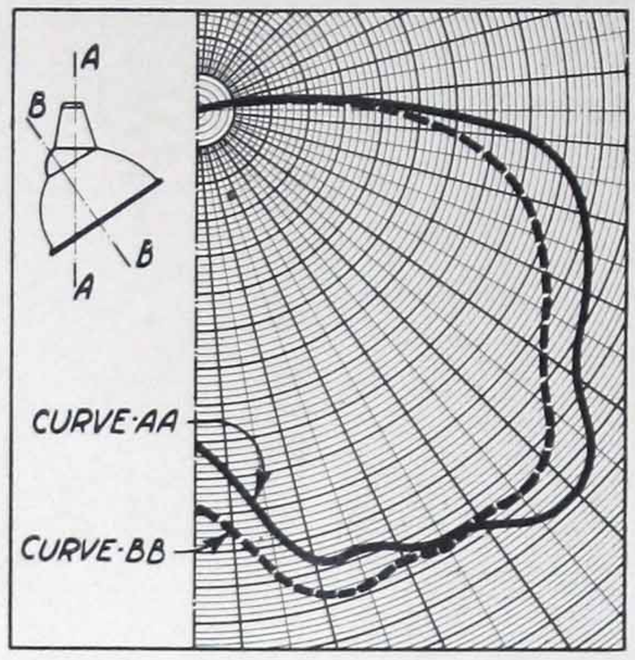
OUTLET BOX MOUNTING
WEMCO QUICK-CHANGE
CAST ALUMINUM HOOD

Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 250-Watt
7½	7¾ x 7¾	55–65	Favorable Average Unfavorable	40–52 30–40 24–31
8½	8½ x 8½	65–75	Favorable Average Unfavorable	34–42 25–34 20–25
8½	9 x 9	75–85	Favorable Average Unfavorable	30–38 22–29 18–22
9	9½ x 9½	85–95	Favorable Average Unfavorable	27–34 20–27 16–20
9½	10 x 10	95–110	Favorable Average Unfavorable	25–32 18–25 16–18
10	11 x 11	110–125	Favorable Average Unfavorable	21–27 16–21 13–16
10½	11½ x 11½	125–145	Favorable Average Unfavorable	18–24 14–18 11–14
11½	12½ x 12½	145–170	Favorable Average Unfavorable	17–21 13–17 10–13
11½	13½ x 13½	170–200	Favorable Average Unfavorable	14–17 10–14 9–10.5
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	11–14 9–11 7.5–9
13	15½ x 15½	230–260	Favorable Average Unfavorable	10.5–12.5 8.5–10 6–7.5
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	10–11 7–8.5 5.5–6.5
14½	18 x 18	300–340	Favorable Average Unfavorable	7–10 5.5–7 5–5.5
15½	19 x 19	340–390	Favorable Average Unfavorable	6.5–8.5 5–5.5 4–5
16½	20½ x 20½	390–440	Favorable Average Unfavorable	5.5–7 4–5.5 3.5–4
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	5–5.5 3.5–5 3–3.5

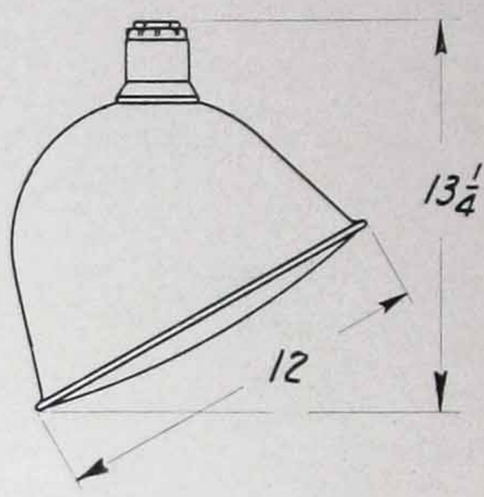
HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT SYMMETRICAL ANGLE REFLECTOR

250-Watt Symmetrical Angle Reflector and Glass Cover



Vertical Distribution with 250-Watt Symmetrical Angle Reflector



Dimensions in Inches
Symmetrical Angle Reflector

This unit is designed especially for the 250-watt High Intensity Mercury lamp. It provides ideal illumination where intensive local lighting of vertical and horizontal surfaces from the side is required.

The reflector, with diffusing glass cover, is properly designed to give a wide spread distribution of light horizontally, and an even distribution of light from top to bottom of the vertical surface. It is a 30° angle reflector and provides distribution as shown by the curves.

Various types of hoods are available for mounting such as One-Piece and Wemco Quick-Change, arranged to mount on ½″ conduit, 4″ outlet box, and side outlet hood for ½″ conduit. Complete descriptions of the applicable hoods can be found in Catalog Sections 61-140 and 61-153.

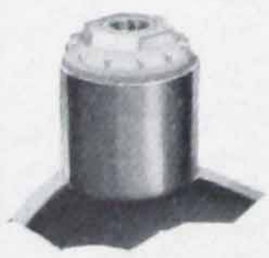
Construction

The reflector is drawn from 24 gauge iron sheet. One ground coat of porcelain enamel is applied all over and two coats of white porcelain enamel inside and one green coat outside with black bead provide the reflecting surface and covering.

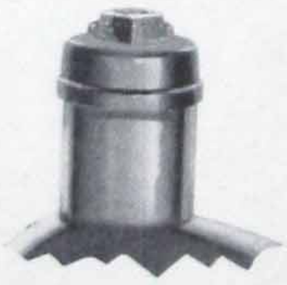
The acid etched glass cover is hinged directly to the reflector bead, supported at three points. It is released by unsnapping two latches. A heavy waterproof felt provides a gasket between reflector and lens.

Accessories

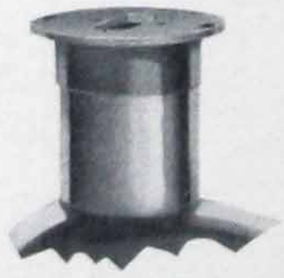
Since the 250-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable current limiting accessories as described and listed on Page 24.



Conduit Mounting
One Piece Reflector



Conduit Mounting
Wemco Quick-Change
Cast Aluminum Hood



Outlet Box Mounting
Wemco Quick-Change
Cast Aluminum Hood

Side Mounting
Wemco Quick-Change
Cast Aluminum Hood

Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No. *† ½-inch Conduit	Style No. *† 4-inch Outlet Box	Style No. *† ½-inch Side Outlet
ONE-PIECE SYMMETRICAL ANGLE REFLECTOR COMPLETE WITH SOCKET AND HINGED COVER							
250	12	13¼	5	35	890 037**	....	... .
ONE-PIECE SYMMETRICAL ANGLE REFLECTOR AND SOCKET ONLY							
...	12	13¼	5	23	890 038	....	....
WEMCO QUICK-CHANGE SYMMETRICAL ANGLE REFLECTOR COMPLETE WITH HOOD AND HINGED COVER							
250	12	13⅜	5	35	890 039**	890 040**	890 057**
WEMCO QUICK-CHANGE SYMMETRICAL ANGLE REFLECTOR ONLY							
250	12	11⅜	5	20	890 041	890 041	890 041
WEMCO QUICK-CHANGE HOODS ONLY							
250	..	1⅞	10	10	347 919	347 920	347 923
HINGED GLASS COVER ONLY							
250	12	...	5	12	890 042	890 042	890 042
GLASS LENS ONLY							
250	12	...	5	8	890 043	890 043	890 043

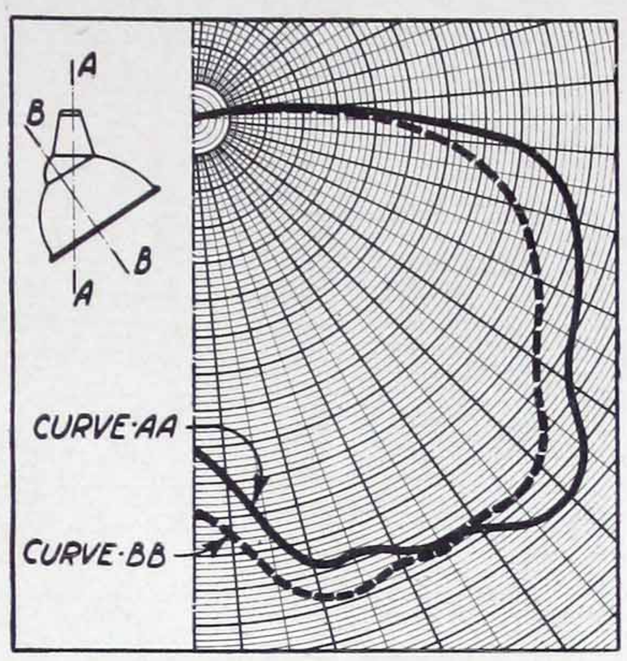
* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
** If clear lens is desired order similar to above complete unit styles except with clear lens. See Price List for deduction.

See pages 24 through 28 for ballast and accessory equipment.

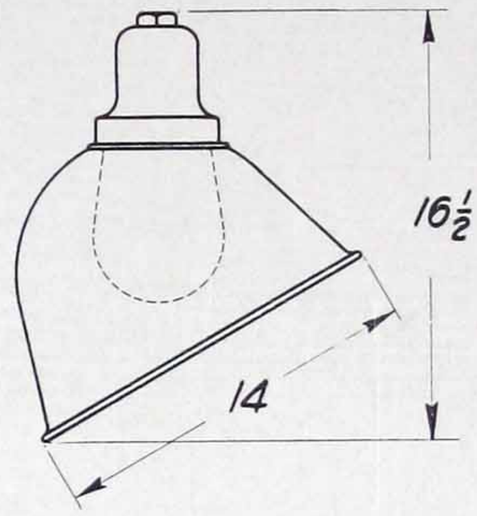
HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT VAPOR PROOF ANGLE REFLECTOR

250-WATT VAPOR PROOF ANGLE REFLECTOR AND GLOBE



VERTICAL DISTRIBUTION WITH 250-WATT VAPOR PROOF ANGLE REFLECTOR



DIMENSIONS IN INCHES
VAPOR PROOF ANGLE REFLECTOR

Westinghouse Angle Type Vapor Proof units for the 250-watt High Intensity Mercury lamp are designed for severe service conditions such as locations where excessive moisture and non-combustible dust are present. In locations with overhead obstructions, these units, mounted on the side walls, provide good illumination on horizontal or vertical surfaces.

The complete unit consists of a cast iron hood with medium socket, an opal glass globe and a porcelain enamel reflector.

CONDUIT MOUNTING CAST-IRON HOOD

Construction

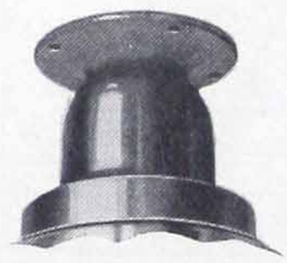
The hood or socket housing is of heavy cast iron tapped for ½″ conduit, or arranged with an outlet box cover for direct attachment to Westinghouse Vapor Proof Box, Style No. 336961. It will also attach directly to a standard 4″ sheet metal outlet box and still retain its vapor proof properties as the outlet box type is vapor proof regardless of whether or not it is connected to a vapor proof conduit box.

The hoods are finished in green, baked, acid resisting enamel. A medium base front connected socket is rigidly mounted in the hood and properly positions the lamp in the globe and reflector. The hood and globe are threaded, and gaskets are provided for the vapor proof enclosing globe.

The reflector is drawn from iron sheet, and finished with one ground coat of porcelain enamel all over, two coats of stainless white porcelain enamel inside, and one green coat outside with black bead. A special aluminum gasket completes the joint between the reflector and hood, and eliminates the possibility of chipped enamel at the points of contact.

Accessories

Since the 400-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide ballast equipment as described and listed on page 24.



OUTLET BOX MOUNTING CAST-IRON HOOD

Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	STANDARD PACKAGE Quantity	STANDARD PACKAGE Wt.	STYLE NO. *† ½-inch Conduit	STYLE NO. *† 4-inch Outlet Box
VAPOR PROOF ANGLE REFLECTOR COMPLETE						
250	14	16½	5	55	890 044**	890 045**
VAPOR PROOF ANGLE REFLECTOR ONLY						
250	14	11½	5	20	890 046	890 046
VAPOR PROOF HOODS ONLY						
...	....	5	10	40	890 047	890 048
VAPOR PROOF GLOBE ONLY						
...	5	6	10	30	890 065	890 065

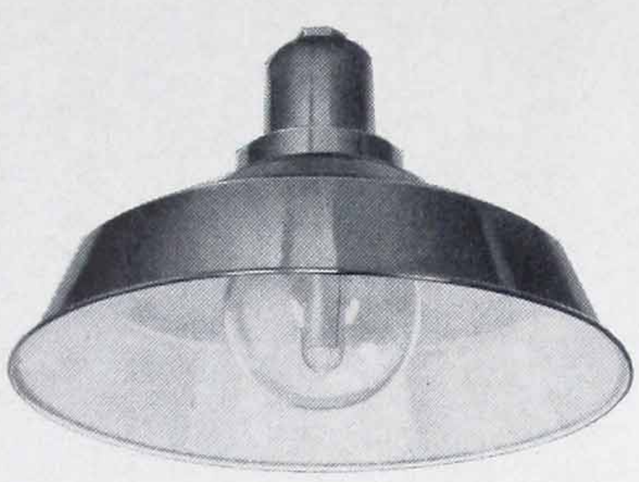
* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
** If clear globe or heat resisting globe is desired order similar to above complete unit styles except with clear globe or heat resisting globe. See Price List for deduction or addition.

See pages 24 through 28 for ballast and accessory equipment.

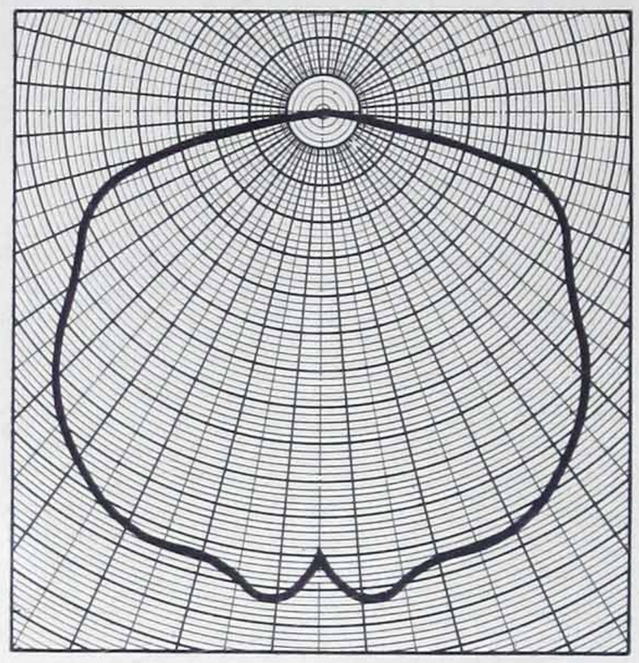
HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT VAPOR PROOF DOME REFLECTOR

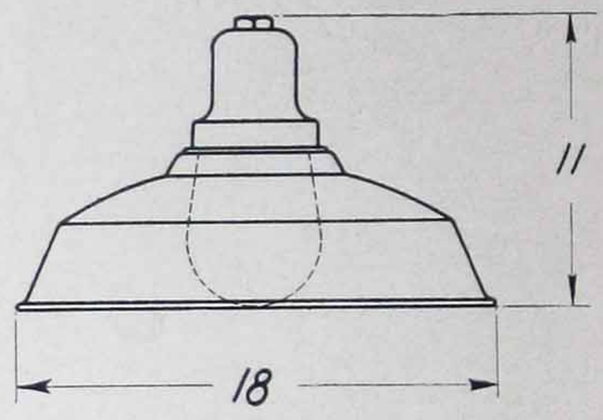
FOR LOW MOUNTING



250-Watt Vapor Proof Dome Reflector and Globe



Vertical Distribution with 250-Watt Vapor Proof Dome Reflector



Dimensions in Inches
Vapor Proof Dome Reflector

Westinghouse Dome Type Vapor Proof units for the 250-watt High Intensity Mercury lamp are designed for severe service conditions such as locations where excessive moisture and non-combustible dust are present. For good general illumination with these units, proper mounting heights and spacings are given on the opposite page.

The complete unit consists of a cast iron hood with medium socket, an opal glass globe and a porcelain enamel reflector.

Construction

The hood or socket housing is of heavy cast iron tapped for ½″ conduit, or arranged with an outlet box cover for direct attachment to Westinghouse Vapor Proof Box, Style No. 336961. It will also attach directly to a standard 4″ sheet metal outlet box and still retain its vapor proof properties as the outlet box type is vapor proof regardless of whether or not it is connected to a vapor proof conduit box.

The hoods are finished in green, baked, acid resisting enamel. A medium base front connected socket is rigidly mounted in the hood and properly positions the lamp in the globe and reflector. The hood and globe are threaded, and gaskets are provided for the vapor proof enclosing globe.

The reflector is drawn from iron sheet, and finished with one ground coat of porcelain enamel all over, two coats of stainless white porcelain enamel inside, and one green coat outside with black bead. A special aluminum gasket completes the joint between the reflector and hood, and eliminates the possibility of chipped enamel at the points of contact.

Accessories

Since the 250-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

Mercury Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No. *† ½-inch Conduit	Style No. *† 4-inch Outlet Box
VAPOR PROOF DOME REFLECTOR COMPLETE						
250	18	11	5	60	890 049**	890 050**
VAPOR PROOF DOME REFLECTOR ONLY						
250	18	5⅞	5	25	890 051	890 051
VAPOR PROOF HOODS ONLY						
250	....	5	10	40	890 047	890 048
VAPOR PROOF GLOBE ONLY						
250	5	6	10	30	890 065	890 065

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.

† ¾-inch can be furnished when specified.

** If clear globe or heat resisting globe is desired order similar to above complete unit styles except with clear glass or heat resisting globe. See Price List for deduction or addition.

See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT VAPOR PROOF DOME REFLECTORS
FOR LOW MOUNTING

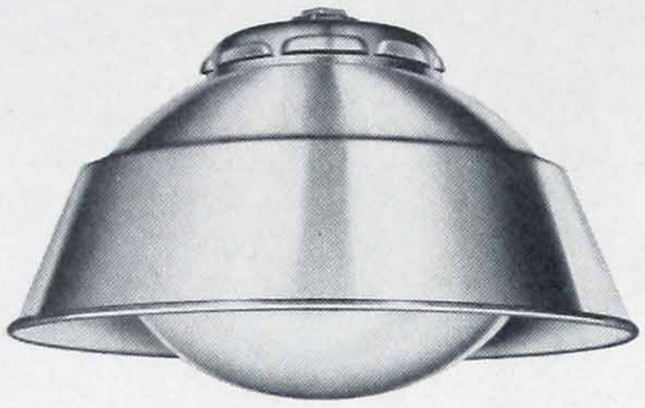
CONDUIT MOUNTING
CAST-IRON HOOD

OUTLET BOX MOUNTING
CAST-IRON HOOD

Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 250-Watt
7½	7¾ x 7¾	55–65	Favorable Average Unfavorable	40–52 30–40 24–31
8½	8½ x 8½	65–75	Favorable Average Unfavorable	34–42 25–34 20–25
8½	9 x 9	75–85	Favorable Average Unfavorable	30–38 22–29 18–22
9	9½ x 9½	85–95	Favorable Average Unfavorable	27–34 20–27 16–20
9½	10 x 10	95–110	Favorable Average Unfavorable	25–32 18–25 16–18
10	11 x 11	110–125	Favorable Average Unfavorable	21–27 16–21 13–16
10½	11½ x 11½	125–145	Favorable Average Unfavorable	18–24 14–18 11–14
11½	12½ x 12½	145–170	Favorable Average Unfavorable	17–21 13–17 10–13
11½	13½ x 13½	170–200	Favorable Average Unfavorable	14–17 10–14 9–10.5
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	11–14 9–11 7.5–9
13	15½ x 15½	230–260	Favorable Average Unfavorable	10.5–12.5 8.5–10 6–7.5
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	10–11 7–8.5 5.5–6.5
14½	18 x 18	300–340	Favorable Average Unfavorable	7–10 5.5–7 5–5.5
15½	19 x 19	340–390	Favorable Average Unfavorable	6.5–8.5 5–5.5 4–5
16½	20½ x 20½	390–440	Favorable Average Unfavorable	5.5–7 4–5.5 3.5–4
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	5–5.5 3.5–5 3–3.5

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

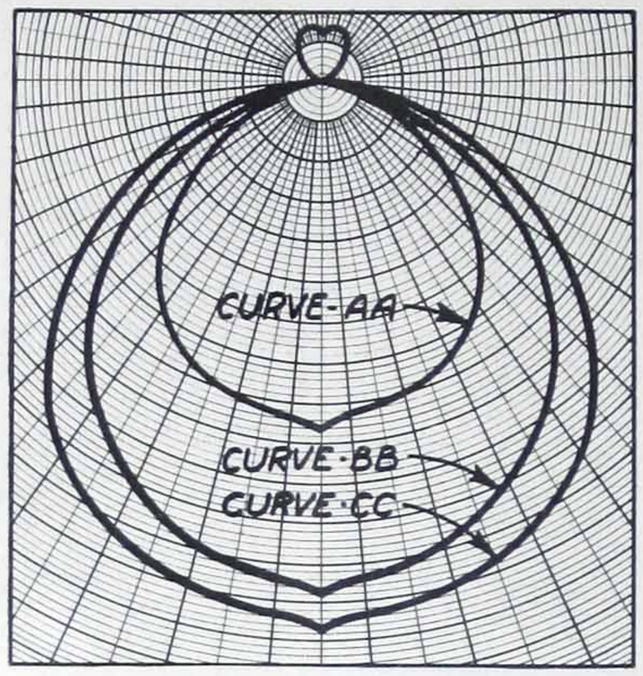
250 WATT MERCURY MAZDA COMBINATION UNIT



250-Watt Mercury Mazda Combination Unit and Globe

For various applications of Industrial lighting where color correction is necessary, the Westinghouse Combination unit effectively and efficiently mixes the light lumens of the 250-Watt High Intensity Mercury lamp with a quantity of light lumens from ordinary Mazda lamps. It is designed for use on mounting heights of 8 to 18 feet. The spacing should not exceed 1¼ times the mounting height.

Two distinct circuits are used, one to control the mercury lamp and one to control the Mazda lamps. The design is such as to allow three 60-watt, three 75-watt or three 100-watt Mazda lamps to be used without interfering with the restarting of the Mercury lamp in case of a voltage interruption. Three 150-watt lamps may be used but the operating temperature will be too high to permit restarting of the Mercury lamp with the Mazda lamps burning.



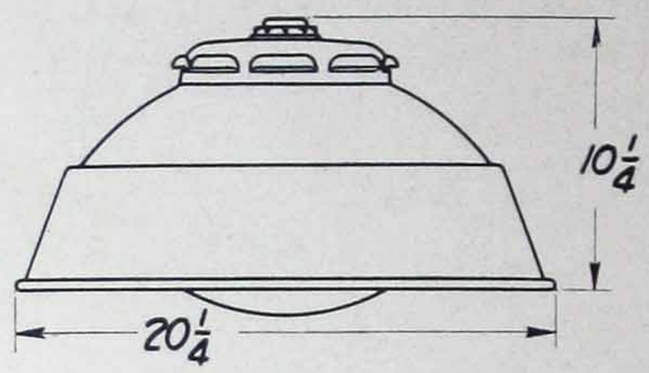
Vertical Distribution with 250-Watt Mercury Mazda Combination Unit. Curve A-A 250-Watt Mercury Lamp Only. Curve B-B 1—250-Watt Mercury Lamp and 3—75-Watt Mazda Lamps. Curve C-C 1—250-Watt Mercury Lamp and 3—100-Watt Mazda Lamps.

Construction

The unit consists of an aluminum reflector, with socket assembly and a monax diffusing hinged glass bowl.

The reflector is made from 14 gauge commercially pure etching grade aluminum sheet. The entire surface is Alzaked for greater permanence and ease of cleaning.

The entire socket assembly which consists of three medium sockets for the Mazda Lamps and one socket for the Mercury Lamp is attached to the top of



Dimensions in Inches
Mercury Mazda Combination Unit

the reflector. A slip type louvered cover provides sufficient ventilation for the sockets and allows for wiring or inspection of wiring after the reflector is in position. It is arranged for mounting on ½″ conduit. The diffusing bowl is banded at the fitter and hinged in the reflector. A felt gasket provides a suitable joint between the glass and the reflector. The entire assembly is simple to wire and the hinged glass bowl provides for quick and easy access to the lamps, and eliminates the hazard of removing large globes. Sufficient ventilation is provided to keep the temperature within safe operating limits.

Accessories

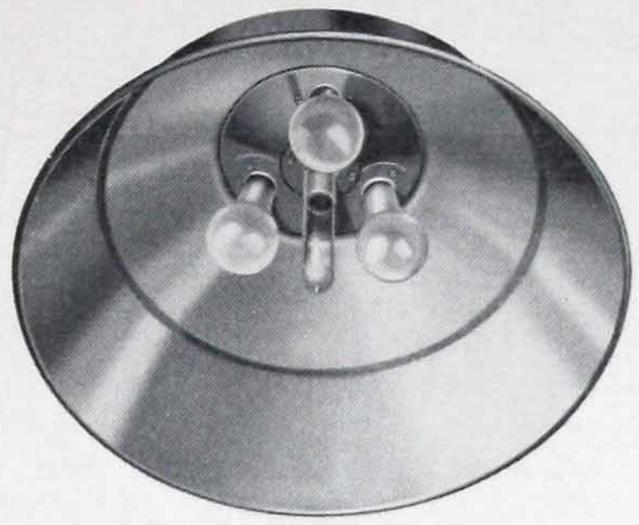
Since the 400-watt High Intensity Mercury lamp will not operate on ordinary lighting circuits, it is necessary to provide suitable ballast equipment as described and listed on page 24.

Recommended Lamp Size in Watts	Diameter Inches	Depth Inches	Standard Package Quantity	Standard Package Wt.	Style No.*† ½-inch Conduit
MERCURY-MAZDA COMBINATION UNIT COMPLETE WITH GLASS BOWL					
1—250-watt Mercury 3—100-watt Mazda	20¼	12⅜	1	25	890 054
MERCURY-MAZDA COMBINATION UNIT ONLY					
1—250-watt Mercury 3—100-watt Mazda	20¼	10¼	1	17	890 055
GLASS BOWL ONLY					
1—250-watt Mercury 3—100-watt Mazda	16	5½	1	8	890 056

* Style numbers do not include lamps—refer to Westinghouse Lamp Company or its agents.
† ¾-inch can be furnished when specified.
See pages 24 through 28 for ballast and accessory equipment.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

250-WATT MERCURY MAZDA COMBINATION UNIT



LAMP ARRANGEMENT
MERCURY MAZDA COMBINATION UNIT

Distance from Underside of Reflector to Floor to be Not less than (Feet)	Approximate Spacing (Feet)	Area per Outlet (Sq. Ft.)	Conditions Factor	Average Footcandles 250-Watt Mercury 3—100-Watt Mazda
7½	7¾ x 7¾	55–65	Favorable Average Unfavorable	62–80 48–60 36–48
8½	8½ x 8½	65–75	Favorable Average Unfavorable	53–66 39–49 30–39
8½	9 x 9	75–85	Favorable Average Unfavorable	46–60 35–46 28–35
9	9½ x 9½	85–95	Favorable Average Unfavorable	41–53 30–43 24–30
9½	10 x 10	95–110	Favorable Average Unfavorable	38–50 28–39 24–28
10	11 x 11	110–125	Favorable Average Unfavorable	33–41 24–33 20–24
10½	11½ x 11½	125–145	Favorable Average Unfavorable	28–37 22–28 17–22
11½	12½ x 12½	145–170	Favorable Average Unfavorable	26–32 20–25 16–20
11½	13½ x 13½	170–200	Favorable Average Unfavorable	22–28 16–22 12–16
12½	14¾ x 14¾	200–230	Favorable Average Unfavorable	18–23 13–18 11–13
13	15½ x 15½	230–260	Favorable Average Unfavorable	16–21 12–16 10–12
13½	16¾ x 16¾	260–300	Favorable Average Unfavorable	14–18 11–14 8.5–11
14½	18 x 18	300–340	Favorable Average Unfavorable	12–14 10–12 7.5–9.5
15½	19 x 19	340–390	Favorable Average Unfavorable	11–13 8.5–11 6.5–8
16½	20½ x 20½	390–440	Favorable Average Unfavorable	10–12 7.5–9.5 6–7.5
17	21¾ x 21¾	440–500	Favorable Average Unfavorable	7.5–9.5 6–7.5 5–6

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

TRANSFORMERS AND REACTORS

High Intensity Mercury Lamps will operate only on alternating current circuits. They cannot be operated directly in any existing socket on a regular multiple circuit. On account of the difference between initial starting voltage required for the lamp and the final operating voltage, a transformer with high internal reactance or a reactor must be used with **each** lamp. The transformer or reactor acts like a valve to regulate the current of the lamp during starting period of lamp and to limit the current of lamp for slight changes in line voltage during normal operation.

The starting and operating voltage of the 400-watt mercury lamp are such that if service provides 208 to 240 volt range at the fixture then each 400-watt mercury lamp should be connected in series with a reactor. Service of 107 to 123-volt range for this lamp requires a step-up voltage transformer with high internal reactance instead of a reactor.

The starting and operating voltage of the 250-watt mercury lamp are considerably lower than for 400-watt lamp and because of low power factor a reactor is not recommended in series when service provides 208 to 240 volt range. Transformers with proper secondary voltage are, therefore, used for both 208 to 240-volt range of service and 107 to 123-volt range of service.

Because the wattage input to the amp must be closely limited, transformers and reactors are equipped with several line taps to meet all common service voltages. The nearest tap to available line voltage should always be used.

The use of a transformer with high internal reactance or a reactor to provide the necessary high starting voltage and somewhat lower operating voltage results in a reduced power factor unless corrected. This power factor will be approximately 65% on 400-watt transformer, 60% to 70% on 400-watt reactor depending on particular tap and approximately 50% on 250-watt transformers. Therefore, Transformer Capacitor Units or Reactor-Capacitor Units are available to correct this condition. These units consist of two-piece cases with the transformer or the reactor mounted in the case below the capacitor of sufficient capacity to provide a power factor of 90% to 95%.

All units are available in two types of mounting—Suspension Mounting Type, from which lighting fixture can be hung, or Wall Mounting Type, which can be mounted on wall or ceiling or any flat surface.

The two-piece case, in each case, is of drawn steel finished with a blue-gray baked enamel.

On the Suspension Type Units, the upper half of the case has attached to it a ¾-inch Pipe Nipple through which two line leads, six inches long, project. A convenient form of conduit box should be attached to the ¾-inch nipple for suspending the unit and facilitate making line connections. If it is not convenient to suspend unit directly from conduit box a window with cover is provided in the upper half of case of Reactor-Capacitor, Transformer-Capacitor, and Transformer units to permit pulling leads into upper part of case for making line connections. On Reactor Units only, the lower part of case can be dropped to permit such connections.

The lower half of the case of Suspension Type Units is also provided with a ½-inch Pipe Nipple for suspension of the lighting fixture. The lower half of the case is also provided with a window with cover for access to the terminal board with the various line tap connectors and to permit lamp connections. Proper line tap connection is simply made by attaching lead with stud to proper spring snap terminal, eliminating soldered and taped joint. The change from one primary tap to another is accomplished in a few seconds time without the aid of tools. All line and lamp leads are equipped with solderless connectors to simplify installations.

The wall mounting type of unit is of the same general construction as the suspension type except that mounting lugs for side mounting are welded to side of case and suspension nipples are omitted. Also, all connections are made in the one end of case, necessitating only one window with cover for connections and access to the terminal board. Knockouts are provided in side and end of the connection compartment for ½–inch conduit permitting straight through wiring or entrance at lower end. Two knockouts are provided on the side 180° apart and two in the lower end.

The listings appearing below include "Transformer Only, In Case" and "Reactor Oniy, in Case." These units are similar to the high-power-factor units, except that the capacitor is omitted.

"Transformer Only—Bare" and "Reactor Only—Bare" are available for manufacturers to incorporate in their own housings. Only the transformer in "Transformer-Capacitor" unit has taps for the capacitor.

TRANSFORMERS AND REACTORS FOR HIGH INTENSITY MERCURY LAMPS
LISTING

Description	Lamp Watts	Suspension Mtg. Style No.	Suspension Mtg. Ship. Wt.	Wall Mtg. Style No.	Wall Mtg. Ship Wt.	Bare Style No.	Bare Ship Wt.
Transformers for 107–115–123 Volt, 60 cycle Circuits							
Transformer—Capacitor Unit	400*	888 806	30	888 802	30	....	....
Transformer—Only in Case	400*	888 807	28	888 803	28	....	....
Transformer Only, Bare	400*	....	....	....	....	888 808	22
Transformer—Capacitor Unit	250†	888 853	30	888 844	30	....	....
Transformer Only in Case	250†	888 841	28	888 840	28	....	....
Transformer Only, Bare	250†	....	....	....	....	888 838	22
Transformers for 208–220–230–240 Volt, 60 cycle Circuits							
Transformer—Capacitor Unit	250†	888 852	30	888 851	30	....	....
Transformer Only in Case	250†	888 848	28	888 847	28	....	....
Transformer Only, Bare	250†	....	....	....	....	888 845	22
Reactors for 208–220–230–240 Volt, 60 cycle Circuits							
Reactor—Capacitor Unit	400*	888 809	25	888 804	25	....	....
Reactor Only in Case	400*	888 810	20	888 805	20	....	....
Reactor Only, Bare	400*	....	....	....	....	789 618	12

* For use with 400-watt Type H-1 Lamp.
† For use with 250-watt Type H-2 Lamp.

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

TRANSFORMERS AND REACTORS

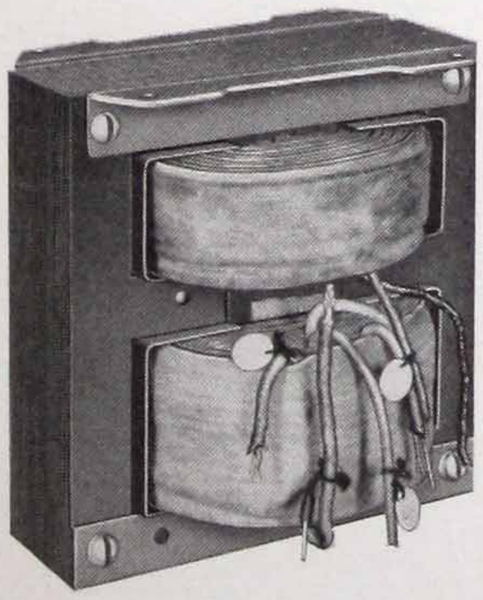
REACTOR-CAPACITOR OR TRANSFORMER-CAPACITOR OR TRANSFORMER ONLY, SUSPENSION MOUNTING

VIEW OF TERMINAL BOARD

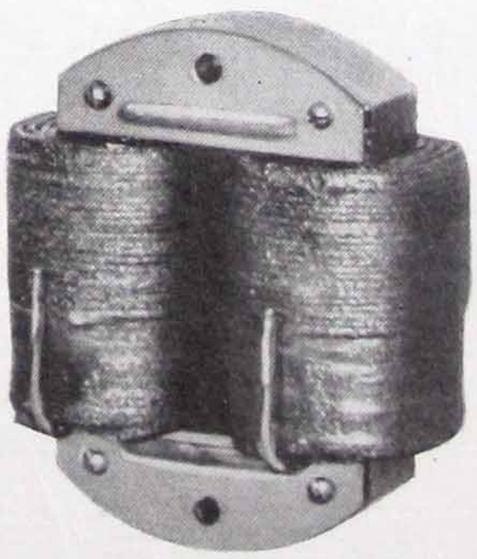
REACTOR-CAPACITOR OR TRANSFORMER-CAPACITOR OR TRANSFORMER ONLY WALL MOUNTING

REACTOR ONLY SUSPENSION MOUNTING

REACTOR ONLY, WALL MOUNTING



TRANSFORMER ONLY, BARE



REACTOR ONLY, BARE

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

TRANSFORMERS AND REACTORS

OUTLINE DRAWINGS

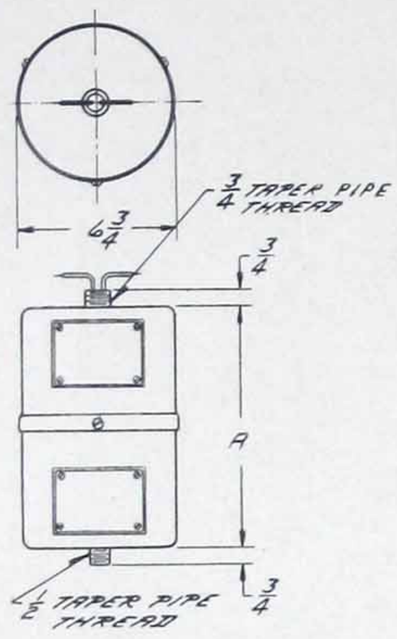


FIG. 1

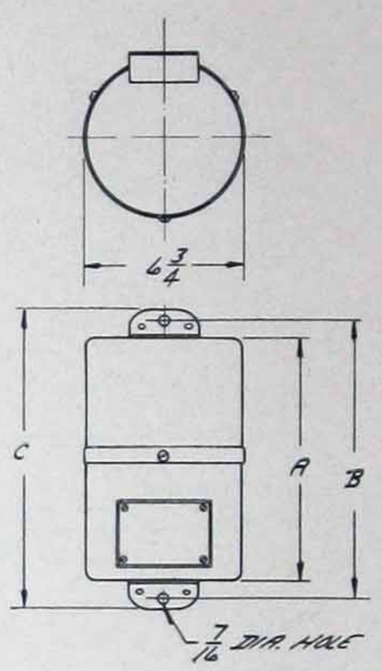


FIG. 2

Style	Figure	—DIMENSIONS IN INCHES— A	B	C
888 806	1	10 3/8	....	....
888 853	1	10 3/8	....	....
888 852	1	10 3/8	....	....
888 809	1	10 3/8	....	....
888 802	2	10 3/8	11 7/8	12 7/8
888 844	2	10 3/8	11 7/8	12 7/8
888 851	2	10 3/8	11 7/8	12 7/8
888 804	2	10 3/8	11 7/8	12 7/8
888 807	1	8 11/16	....	....
888 841	1	8 11/16	....	....
888 848	1	8 11/16	....	....
888 803	2	8 11/16	10 3/16	11 3/16
888 840	2	8 11/16	10 3/16	11 3/16
888 847	2	8 11/16	10 3/16	11 3/16
888 810	3	....	....	....
888 805	4	....	....	....
888 808	5	....	....	....
888 838	5	....	....	....
888 845	5	....	....	....
789 618	6	....	....	....

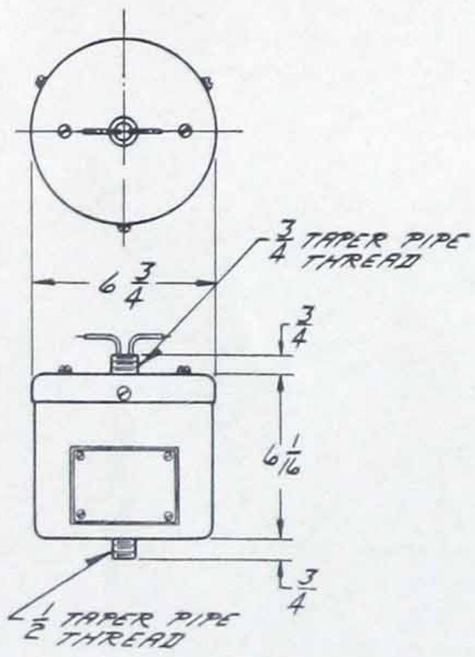


FIG. 3

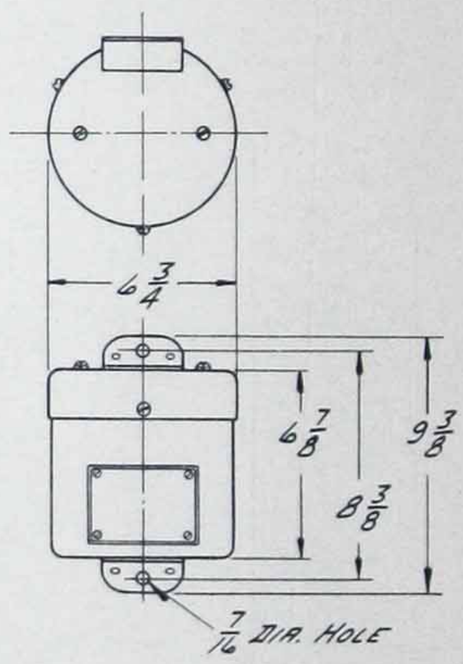


FIG. 4

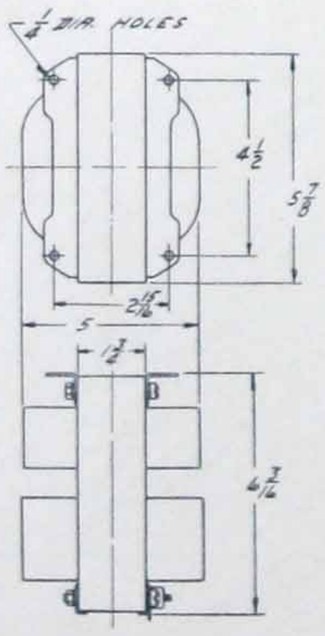


FIG. 5

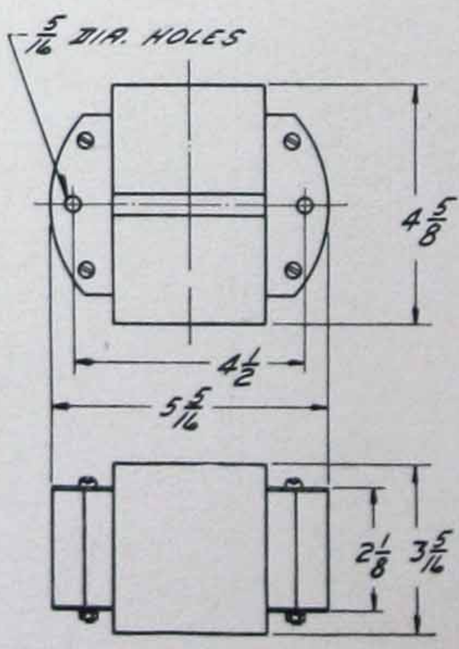
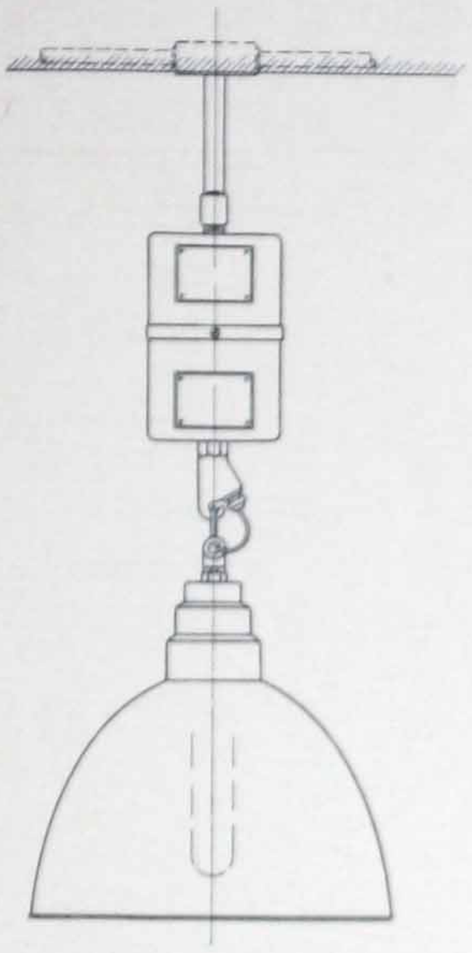


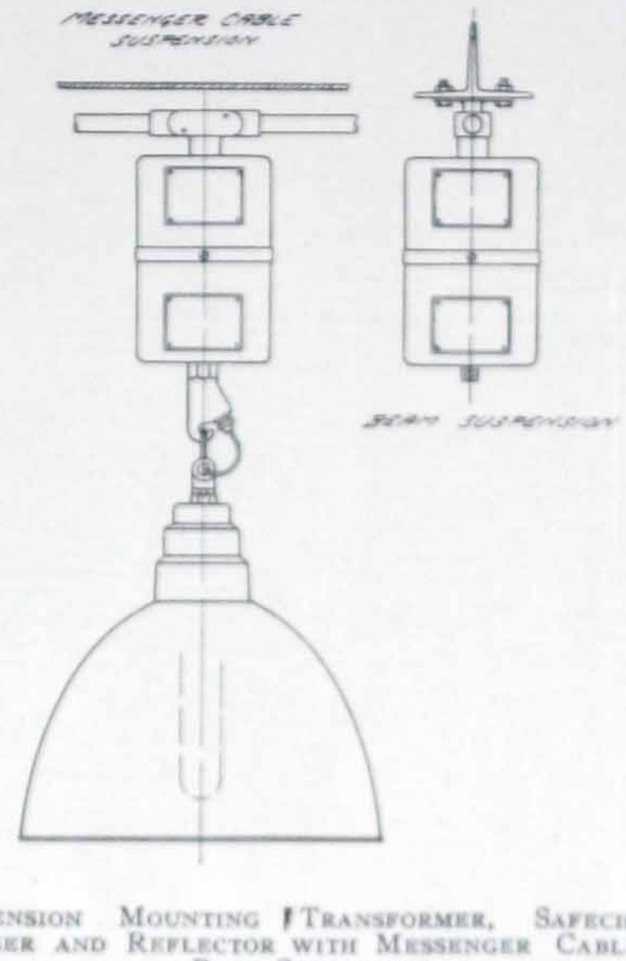
FIG. 6

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

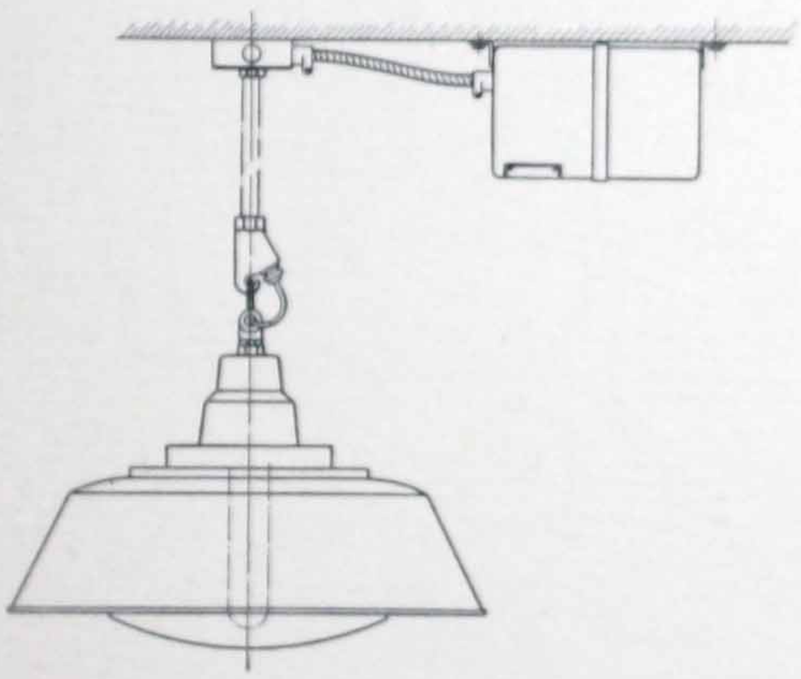
TYPICAL INSTALLATION ASSEMBLIES



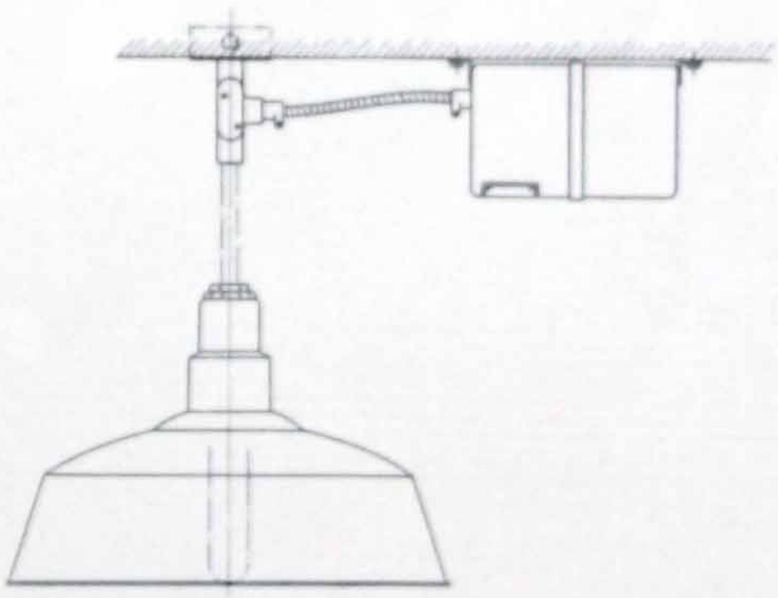
SUSPENSION MOUNTING TRANSFORMER, SAFECHANGE HANGER AND REFLECTOR WITH OUTLET BOX MOUNTED FLUSH WITH CEILING



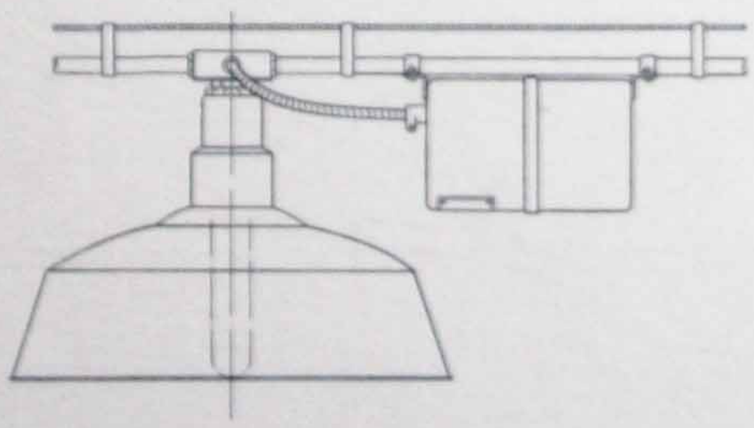
SUSPENSION MOUNTING TRANSFORMER, SAFECHANGE HANGER AND REFLECTOR WITH MESSENGER CABLE OR BEAM SUSPENSION



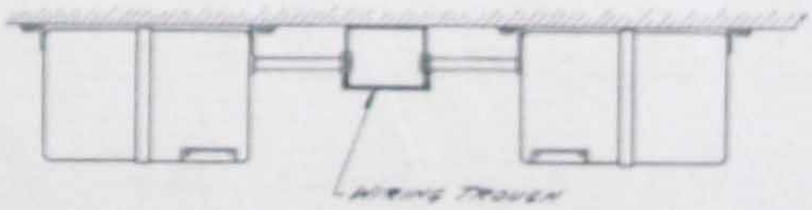
WALL MOUNTING TRANSFORMER, SAFECHANGE HANGER AND REFLECTOR WITH SURFACE MOUNTED OUTLET BOX



WALL MOUNTING TRANSFORMER AND REFLECTOR WITH OUTLET BOX MOUNTED FLUSH WITH CEILING



MESSENGER CABLE SUSPENSION OF CONDUIT, WALL MOUNTING TYPE TRANSFORMER AND REFLECTOR.
TRANSFORMER ATTACHED TO CONDUIT WITH CONDUIT STRAPS



GROUP OF WALL MOUNTING TRANSFORMERS

HIGH INTENSITY MERCURY LIGHTING EQUIPMENT

SAFECHANGE HANGER

The Safe-Change Hanger is used extensively to provide greater flexibility and ease of maintenance between High Intensity Mercury fixtures and accessories. The Hanger assures proper positioning of the lamp and reflector regardless of the position of the supporting stem. The Safe-Change Hanger also facilitates removing and replacing reflectors.

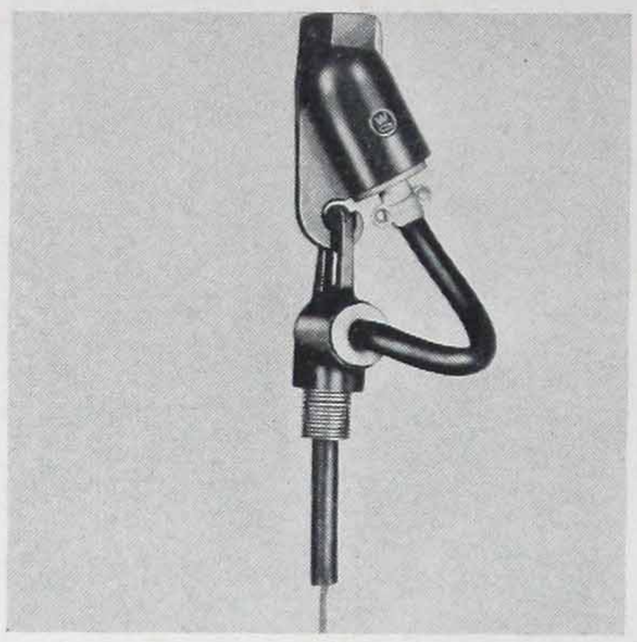
Simplicity—Consists of only two parts, an upper casting for attaching to the conduit and a lower casting for holding the socket.

Economical—Low investment and no maintenance.

Safety—The unit cannot be removed from its hook until the electrical connection is broken.

Polarized—Electrical connection cannot be reversed.

Flexibility—Large and small lighting units may be interchanged or replaced by simply removing the plug and unhooking the unit.



Safechange Hanger for ½-inch Conduit Sockets or Hoods

Time Saving—Lamps and reflectors can be cleaned quickly and easily.

All the maintenance man needs is a ladder and a few spare units. Taking a clean unit with him, the workman climbs the ladder, disconnects the plug of the hanging lamp and removes the unit with his free hand. With his other hand, he hangs the lighting unit that he carried up the ladder.

The attachment plug must be disconnected before the unit can be removed from the hook because, while the electrical connection is in place, the plug locks the unit on the hook. This arrangement eliminates the chance of a unit falling because of a knock or excessive vibration.

The Safe-Change Hanger consists of two small castings. The upper is threaded at the top for attachment to conduit and terminates in a hook with plug housing alongside.

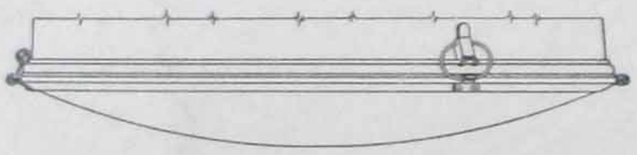
The lower casting consists of an eye to which the lamp socket is attached. Current is conducted to the lamp through the receptacle and plug from which it enters the socket through an insulated bushing.

For All Sockets or Hoods Tapped for ½-Inch Conduit

Type of Mounting	Standard Pkg. Quantity	Standard Pkg. Wt., Lb.	Style No.
½-inch Conduit	10	15	346 571
4-inch Outlet Box	10	15	346 572

DUST-TIGHT GLASS COVERS FOR REFLECTORS

Hinged Glass Cover

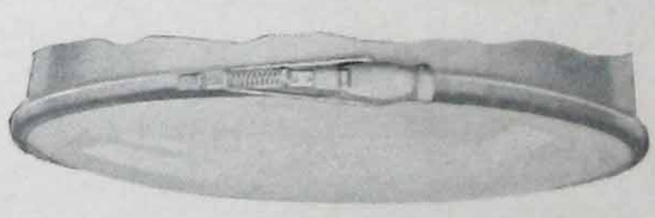


Detail of Hinged Glass Cover

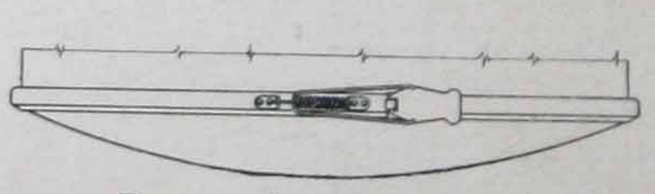
Considerable time can be saved in the cleaning of the reflector when glass covers are used since much less time is required to clean the smooth outer surface of the glass cover than the lamp and the inside of the reflector.

The complete hinged cover is held to the reflector by a wire ring. The cover is hinged to this ring and the felt gasket is held tightly against the edge of the reflector by clips. By releasing these clips the lamp can be replaced without difficulty.

Snap covers are also available. These attach directly to the reflector bead by an expanding "U" shaped band which securely locks the glass lens to the reflector. This cover is so designed that when it is expanded for removing lens it can be locked in this position.



Snap Glass Cover



Detail of Snap Glass Cover

Printed in U. S. A.